RICHARD GROSS

PSYCHOLOGY

THE SCIENCE OF MIND AND BEHAVIOUR

FIFTH EDITION



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Hodder Arnold

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DEDICATION

To my 'three girls', the common thread running through all five editions of this labour of love.

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PREFACE TO THE FIFTH EDITION

The first edition of this book was published in 1987. Eighteen years and four editions later, the same issues seem to recur. How to decide what goes in, what stays in, and what comes out if the book isn't to run into more than one volume.

So, what were my guiding principles?

- The overriding aim was to provide a general introduction to psychology, which means that all the major topic areas are covered.
- Within each topic area, some of the material from the fourth edition has been retained, some removed or pruned, and some given greater emphasis and extended. The extent to which this has been done varies considerably between chapters and sections. For example, Chapter 4 on the Nervous System and Chapter 15 on Perception: Processes and Theories have changed very little, while Interpersonal Relationships (Chapter 28) and Psychopathology (Chapter 44) have been extensively expanded and updated. Overall, most changes have been made to the Social Psychology and Individual Differences sections.
- At the end of each section there is an applied chapter. The aim of these chapters is to demonstrate how the theory and research discussed in the preceding chapters has been used in attempts to understand current real-life issues and problems and to implement practical interventions (such as trying to help people lead safer and healthier lives, interviewing eyewitnesses, enhancing the performance of sports teams, and preventing crime and re-offending).

What's stayed the same?

- The basic structure of the fourth edition is retained – 50 chapters grouped into seven major sections. There are five applied chapters, coming at the ends of Parts 2–6.
- Chapter contents are clearly shown in the panel at the beginning of each chapter, and there's a comprehensive summary at the end of each chapter.
- Throughout each chapter there are '*Ask Yourself...*' breaks. These are designed to encourage you to think about the text that follows, to have questions in your mind (if not always answers) to help you understand and digest the studies and theories that you read about. So, instead of just reading in a fairly passive way, you'll adopt a more critical approach, equipped with some idea of what to expect and what to look out for.

Sometimes, the questions are quite specific, and the answers are given, directly, in the text that immediately follows. At other times, the questions are more general and abstract, and the answers unfold throughout the next few paragraphs. Another kind of question will require you to think about your own experiences and views on a particular issue – in these cases, of course, there's no 'correct' answer.

In all cases, the aim is to engage you, to make the process of reading the text more active and interactive, and, consequently, more interesting. Sometimes, the questions can easily be used as the basis for a seminar or class debate.

What's new?

- Every chapter (except Chapter 1) ends with a section called 'Links with other topics/chapters'. This is intended to supplement the cross-referencing that occurs within every chapter, and sometimes cross-references are repeated in this end-of-chapter section. There's always a degree of artificiality about how course syllabuses, and textbooks, are organised into distinct topics, sections and chapters. In reality, there's considerable overlap and interrelatedness between these different 'chunks' of psychological knowledge, and part of the ability to evaluate a particular theory or piece of research is to see its connections with others. This new section is designed to help you develop this ability.
- This fifth edition is in full-colour, with different sections being 'colour-coded' to make it easier to find your way around the book – and generally to make it more attractive.
- The major new feature is an accompanying CD-Rom. This provides extra resources that couldn't be included in the text – either for practical or technological reasons. For every chapter in the text, there are:
  - *drag-and-drop* exercises to help you check your understanding of some of the major terms and concepts;

- *self-assessment questions*: these are essay-style questions, which require you to display both basic understanding and evaluation of a range of topics;
- *sample essay answers*: these are 650–1000-word sample answers, drawing on material in the chapter, showing the various skills required in essay-writing. I must stress that these are 'samples'/'examples' only – there's no one correct way to answer any essay-style question (although they are meant to show what a 'good' standard of essay might look like);
- *downloadable schemas*: these are schematic summaries of the entire chapter, condensed into a single 'screen' (and printable on to a single page). Some are much more detailed than others (largely reflecting the density of chapter content and the nature of the topic). They are designed as revision aids and could suggest how you might prepare your own schemas;
- *websites and further reading*: the websites are hyperlinked, so that you can go straight to them (by clicking on the website address). Some contain online questionnaires or experiments, and many have links with other useful sites. These, and the recommendations for further reading, appeared in the fourth edition text.

Hopefully, all that was good about the previous edition is still here, mixed in with much that's different. The appeal of the fourth edition was that it catered for the needs of students on a wide variety of courses, without being written specifically or exclusively for any one group. I hope – and trust – that the same can be said of this fifth edition. As before, please let me know what you think of my efforts (via the publisher) – it's not just students who need feedback!

Good luck – and enjoy!

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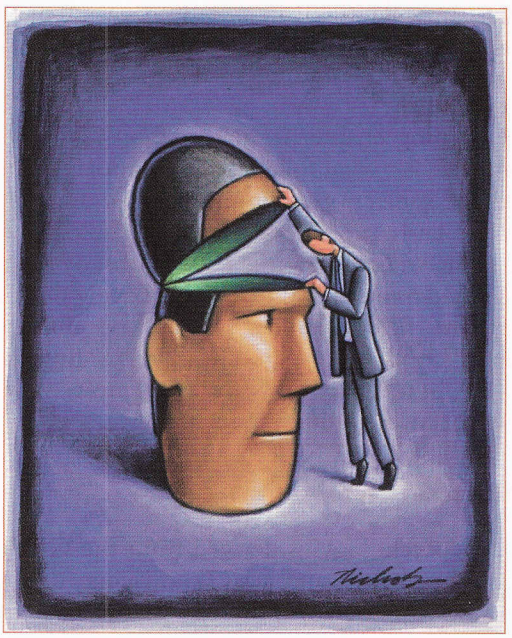
THE NATURE AND SCOPE OF PSYCHOLOGY

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1

WHAT IS THIS THING CALLED PSYCHOLOGY?



INTRODUCTION AND OVERVIEW

When a psychologist meets someone for the first time at, say, a party and replies truthfully to the standard opening line, 'What do you do for a living?', the reaction of the newly made acquaintance is likely to fall into one of the following categories:

- 'Oh, I'd better be careful what I say from now on' (partly defensive, partly amused)
- 'I bet you meet some right weirdos in your work' (partly intrigued, partly sympathetic)
- 'What exactly is psychology?' (partly inquisitive, partly puzzled).

ASK YOURSELF...

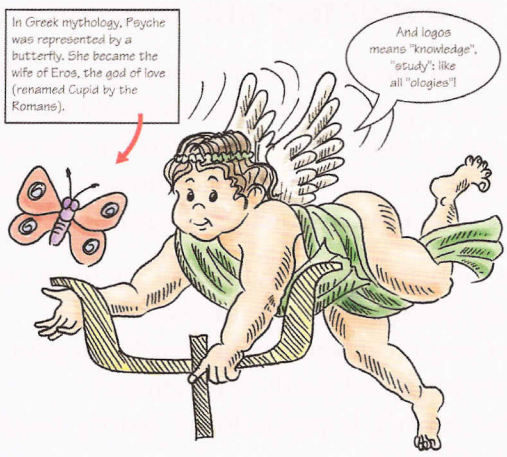
- If you're completely new to psychology, how might you react?
- If you've studied it before, how would you define it and what's the range of topics/subjects it covers?
- How does it differ from other disciplines, such as physiology, sociology, and anthropology?

What these reactions betray – especially the first two – is an inaccurate and incomplete understanding of the subject. The first seems to imply that psychologists are mind readers and have access to other people's thoughts (they *don't*), while the second seems to imply that psychologists work only or largely with people who are 'mentally ill' or 'mad' (again, they *don't*, although many do). The third reaction perhaps implies that the boundaries between psychology and other subject disciplines aren't clearly drawn (they *aren't*), and what this chapter aims to do is make them sufficiently clear to enable you, the reader, who may be 'visiting' psychology for the first time, to find your way around this book – and the subject – relatively easily.

The opening chapter in any textbook is intended to 'set the scene' for what follows, and this normally involves defining the subject or discipline. In most disciplines, this is usually a fairly simple task. With psychology, however, it's far from straightforward. Definitions of psychology have changed frequently during its relatively short history as a separate field of study. This reflects different, and sometimes conflicting, theoretical views regarding the nature of human beings and the most appropriate methods for investigating them.

A BRIEF HISTORY

The word 'psychology' is derived from the Greek *psyche* (mind, soul or spirit) and *logos* (knowledge, discourse or study). Literally, then, psychology is the 'study of the mind'.



The emergence of psychology as a separate discipline is generally dated at 1879, when Wilhelm Wundt opened the first psychological laboratory at the University of Leipzig in Germany. Wundt and his co-workers were attempting to investigate 'the mind' through *introspection* (observing and analysing the structure of their own conscious mental processes). Introspection's aim was to analyse conscious thought into its basic elements and perception into its constituent sensations, much as chemists analyse compounds into elements. This attempt to identify the structure of conscious thought is called *structuralism*.

Wundt and his co-workers recorded and measured the results of their introspections under *controlled conditions*, using the same physical surroundings, the same 'stimulus' (such as a clicking metronome), the same verbal instructions to each participant, and so on. This emphasis on measurement and control marked the separation of the 'new psychology' from its parent discipline of philosophy.

Philosophers had discussed 'the mind' for thousands of years. For the first time, *scientists* (Wundt was a physiologist by training) applied some of scientific investigation's basic methods to the study of mental processes. This was reflected in James's (1890) definition of psychology as:

> ... the Science of Mental Life, both of its phenomena and of their conditions ... The Phenomena are such things as we call feelings, desires, cognition, reasoning, decisions and the like.

However, by the early twentieth century, the validity and usefulness of introspection were being seriously questioned, particularly by an American psychologist, John B. Watson. Watson believed that the results of introspection could never be proved or disproved, since if one person's introspection produced different results from another's, how could we ever decide which was correct? *Objectively*, of course, we cannot, since it's impossible to 'get behind' an introspective report to check its accuracy. Introspection is *subjective*, and only the individual can observe his/her own mental processes.

Consequently, Watson (1913) proposed that psychologists should confine themselves to studying *behaviour*, since only this is measurable and observable by more than one person. Watson's form of psychology was known as *behaviourism*. It largely replaced introspectionism and advocated that people should be regarded as complex animals and studied using the same scientific methods as those used in chemistry and physics. For Watson, the only way psychology could make any claim to being scientific was to emulate the natural sciences and adopt its own objective methods. He defined psychology as:

> ... that division of Natural Science which takes human behaviour – the doings and sayings, both learned and unlearned – as its subject matter. (Watson, 1919)

The study of inaccessible, private, mental processes was to have no place in a truly scientific psychology.

Especially in America, behaviourism (in one form or another) remained the dominant force in psychology for the next 40 years or so. The emphasis on the role of *learning* (in the form of *conditioning*) was to make that topic one of the central areas of psychological research as a whole (see Chapter 2, pages 17–19 and Chapter 11).

Box 1.1 Psychoanalytic theory and Gestalt psychology

- In 1900, Sigmund Freud, a neurologist living in Vienna, first published his *psychoanalytic theory* of personality in which the *unconscious* mind played a crucial role. In parallel with this theory, he developed a form of psychotherapy called *psychoanalysis*. Freud's theory (which forms the basis of the *psychodynamic* approach) represented a challenge and a major alternative to behaviourism (see Chapter 2, pages 19–23).
- A reaction against both structuralism and behaviourism came from the *Gestalt* school of psychology, which emerged in the 1920s in Austria and Germany. Gestalt psychologists were mainly interested in perception, and believed that perceptions couldn't be broken down in the way that Wundt proposed (see Chapter 3) and behaviourists advocated for behaviour (see Chapters 3 and 11). Gestalt psychologists identified several 'laws' or *principles of perceptual organisation* (such as 'the whole is greater than the sum of its parts'), which have made a lasting contribution to our understanding of the perceptual process (see Chapter 15 for a detailed discussion).

In the late 1950s, many British and American psychologists began looking to the work of computer scientists to try to understand more complex behaviours which, they felt, had been either neglected altogether or greatly oversimplified by learning theory (conditioning). These complex behaviours were what Wundt, James and other early scientific psychologists had called '*mind*' or mental processes. They were now called *cognition* or *cognitive processes*, and refer to all the ways in which we come to know the world around us, how we attain, retain and regain information, through the processes of perception, attention, memory, problem-solving, decision-making, language and thinking in general.

Cognitive psychologists see people as *information-processors*, and cognitive psychology has been heavily influenced by computer science, with human cognitive processes being compared to the operation of computer programs (the *computer analogy*). Cognitive psychology now forms part of *cognitive science*, which emerged in the late 1970s (see Figure 1.1). The events which together constitute the 'cognitive revolution' are described in Box 3.3 (page 40).

Although mental or cognitive processes can only be *inferred* from what a person does (they cannot be observed literally or directly), mental processes are now accepted as being valid subject matter for psychology, provided they can be made 'public' (as in memory tests or problem-solving tasks). Consequently, what people say and do are perfectly acceptable sources of information *about* their cognitive processes, although the processes

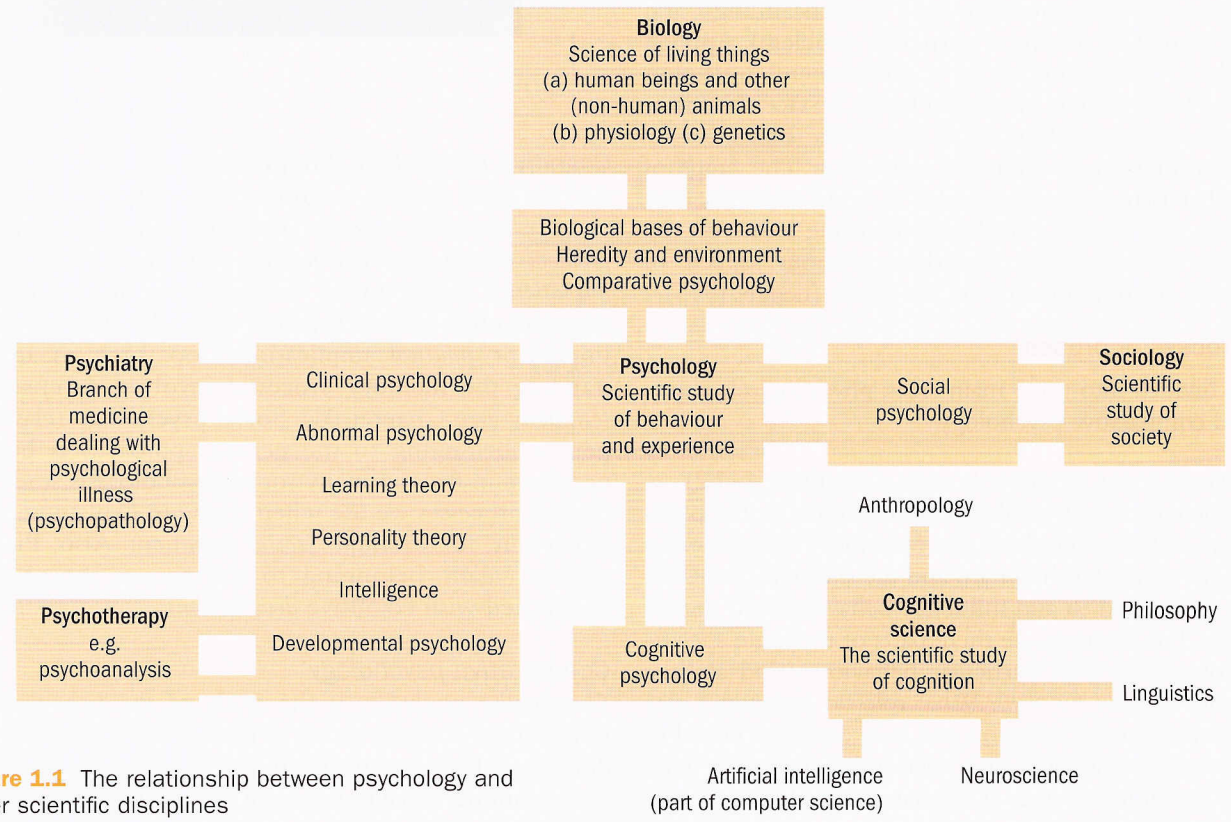


Figure 1.1 The relationship between psychology and other scientific disciplines

themselves remain inaccessible to the observer, who can study them only *indirectly*.

The influence of both behaviourism and cognitive psychology is reflected in Clark and Miller's (1970) definition of psychology as:

> ... the scientific study of behaviour. Its subject matter includes behavioural processes that are observable, such as gestures, speech and physiological changes, and processes that can only be inferred, such as thoughts and dreams.

Similarly, Zimbardo (1992) states that:

> Psychology is formally defined as the scientific study of the behaviour of individuals and their mental processes.

CLASSIFYING THE WORK OF PSYCHOLOGISTS

Despite behaviourist and cognitive psychology's influence on psychology's general direction in the last 90 years or so, much more goes on within psychology than has been outlined so far. There are other theoretical approaches or orientations, other aspects of human (and non-human) activity that constitute the special focus of study, and different kinds of work that different psychologists do.

A useful, but not hard and fast, distinction can be made between the *academic* and *applied* branches of psychology (see Figure 1.2). Academic psychologists carry out research and are attached to a university or research establishment, where they'll also teach undergraduates and supervise the research of postgraduates. Research is both *pure* (done for its own sake and intended, primarily, to increase our knowledge and understanding) and *applied* (aimed at solving a particular problem). Applied research is usually funded by a government institution like the Home Office, National Health Service (NHS) or the Department for Education and Skills (DfES), or by some commercial or industrial institution. The range of topics that may be investigated is as wide as psychology itself, but they can be classified as focusing either on the processes or *mechanisms* underlying various aspects of behaviour, or more directly on the *person* (Legge, 1975).

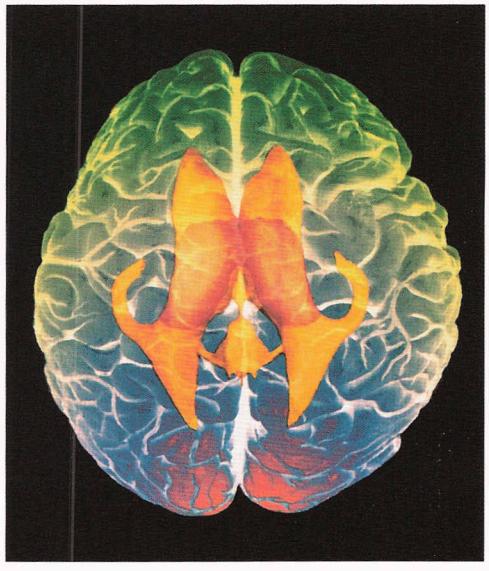
The process approach

This is divided into three main areas: physiological, cognitive and comparative psychology.

Physiological (or bio-)psychology (Chapters 4–12)

Physiological (or *bio-*)*psychologists* are interested in the physical basis of behaviour, how the functions of the nervous system (in particular the brain) and the *endocrine* (*hormonal*) system are related to and influence behaviour and mental processes. For example, are there parts of the brain specifically concerned with particular behaviours and abilities (*localisation of brain function*)? What role do hormones play in the experience of emotion and how are these linked to brain processes? What is the relationship between brain activity and different *states of consciousness* (including sleep)?

A fundamentally important biological process with important implications for psychology is *genetic transmission*. The *heredity and environment* (or *nature–nurture*) issue draws on what geneticists have discovered about the characteristics that can be passed from parents to offspring, how this takes place, and how genetic factors interact with environmental ones (see Chapters 41, 44 and 50). Other topics within physiological psychology include motivation and stress (an important topic within *health psychology*: see Chapter 12), and sensory processes, which are closely connected with perception (see Chapter 15).



Cognitive psychology (Chapters 13–21)

As we saw earlier, cognitive (or mental) processes include *attention*, *memory*, *perception*, *language*, *thinking*, *problem-solving*, *decision-making*, *reasoning* and *concept-formation* ('higher-order' mental activities). Although these are often studied for their own sake, they may have important *practical* implications too, such as understanding the memory processes involved in *eyewitness testimony* (see Chapter 21). Social psychology (classified here as belonging to the person approach) is heavily cognitive in flavour: many social psychologists study the mental processes we use when trying to explain people's behaviour, for example (*social cognition*). Also, Piaget's theory (again, belonging to the person approach) is concerned with cognitive *development*.

Comparative psychology

Comparative psychology is the study of the behaviour of non-human animals, aimed at identifying similarities and differences between species. It also involves studying non-human animal behaviour to gain a better understanding of

human behaviour. The basis of comparative psychology is *evolutionary theory*. Research areas include classical and operant conditioning (see Chapter 11), animal communication, language and memory (see Gross *et al.*, 2000), and evolutionary explanations of human behaviour (see Chapter 2, pages 30–33, and Clamp, 2001). Teaching language to non-humans is discussed in relation to language development (Chapter 19).

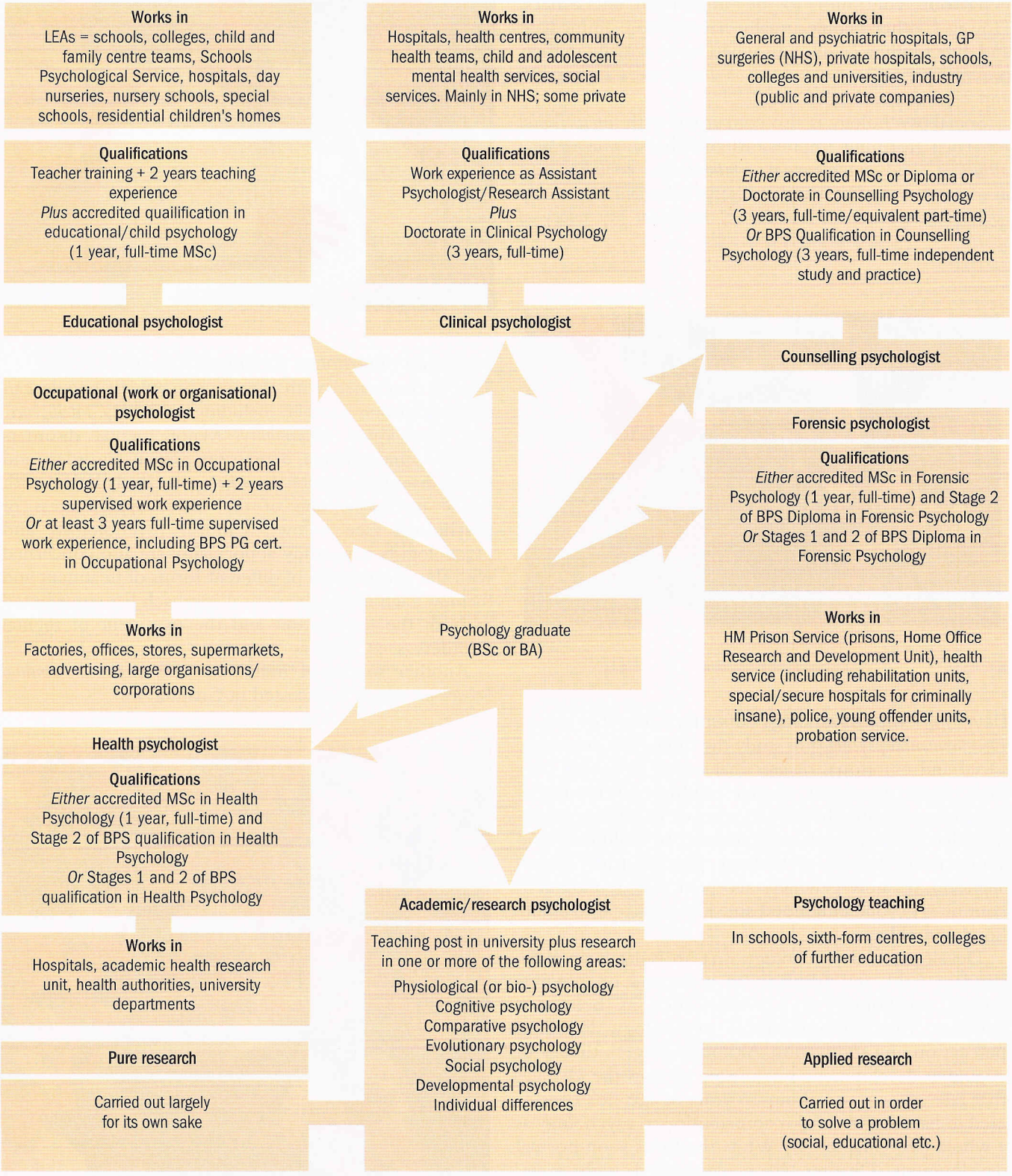


Figure 1.2 The main areas of academic and applied psychology open to psychology graduates

Social psychology (Chapters 22–31)

Some psychologists would claim that 'all psychology is social psychology', because all behaviour takes place within a social context and, even when we're alone, our behaviour continues to be influenced by others. However, other people usually have a more immediate and direct influence upon us when we're actually in their presence (as in *conformity and obedience*: see Chapters 26 and 27).

Social psychology is also concerned with *interpersonal perception* (forming impressions of others), *interpersonal attraction*, and *interpersonal relationships*, *prejudice* and *discrimination*, and *pro-* and *anti-social behaviour* (especially *aggression*). Chapter 31 looks at the *social psychology of sport*.





Developmental psychology (Chapters 32–40)

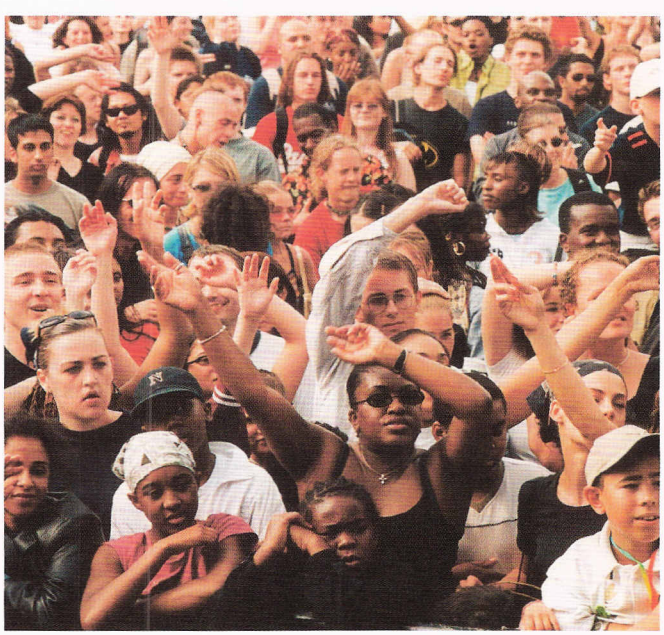
Developmental psychologists study the biological, cognitive, social and emotional *changes* that occur in people over time. One significant change within developmental psychology during the past 30 years or so is the recognition that development isn't confined to childhood and adolescence, but is a lifelong process (the *lifespan approach*). It's now generally accepted that development continues beyond childhood and adolescence into adulthood and old age.

Developmental psychology isn't an isolated or independent field, and advances in it depend on progress within psychology as a whole, such as behaviour genetics, (neuro)physiological psychology, learning, perception and motivation. Although Piaget's theory of cognitive development was meant to map the changes that take place up to about 15 years of age, he's considered to have made a major contribution to psychology as a whole (see Chapter 34). While the focus is on normal development, Chapter 40 is concerned with *exceptional/atypical development*.

Individual differences (Chapters 41–46)

This is concerned with the ways in which people can differ from one another, including *personality*, *intelligence*, and *psychological abnormality*. Major mental disorders include schizophrenia, depression, anxiety disorders and eating disorders. *Abnormal psychology* is closely linked with *clinical psychology*, one of the major *applied* areas of psychology (see below). Clinical psychologists and psychologists who study abnormality are also concerned with the effectiveness of different forms of treatment and therapy. Each major theoretical approach has contributed to both the explanation and the treatment of mental disorders (see Chapters 2 and 45).

Another source of individual differences is *criminal behaviour*, which is discussed in Chapter 46.



Comparing the process and person approaches

In practice, it's very difficult to separate the two approaches, even if it can be done theoretically. However, there are important relative differences between them.

Box 1.2 Some important differences between the process and person approaches

- **The process approach** is typically confined to the laboratory (where experiments are the method of choice). It makes far greater experimental use of non-human animals and assumes that psychological processes (particularly learning) are essentially the same in all species, and that any differences between species are only *quantitative* (differences of degree).
- **The person approach** makes much greater use of field studies (such as observing behaviour in its natural environment) and of non-experimental methods (e.g. correlational studies: see Coolican, 1999). Typically, human participants are studied, and it's assumed that there are *qualitative* differences (differences in kind) between humans and non-humans.

Areas of applied psychology

Discussion of the person/process approaches has been largely concerned with the *academic* branch of psychology. Since the various areas of applied psychology are all concerned with people, they can be thought of as the *applied* aspects of the person approach.

According to Hartley and Branthwaite (1997), most applied psychologists work in four main areas: *clinical*, *educational* and *occupational psychology*, and *government service* (such as *forensic psychologists*). In addition, Coolican *et al.* (1996) identify *forensic* (or *criminological*), *sport*, *health* and *environmental psychologists*. Hartley and Branthwaite argue that the work psychologists do in these different areas has much in common: it's the *subject matter* of their jobs that differs, rather than the skills they employ. Consequently, they consider an applied psychologist to be a person who can deploy specialised skills appropriately in different situations.

Box 1.3 Seven major skills (or roles) used by applied psychologists

- **The psychologist as counsellor**: helping people to talk openly, express their feelings, explore problems more deeply, and see these problems from different perspectives. Problems may include school phobia, marriage crises and traumatic experiences (such as being the victim of a hijacking), and the counsellor can adopt a more or less directive approach (see Chapter 2, pages 24–25, and Chapter 45).
- **The psychologist as colleague**: working as a member of a team and bringing a particular perspective to a task, namely drawing attention to the human issues, such as the point of view of the individual end-user (be it a product or a service of some kind).
- **The psychologist as expert**: drawing upon psychologists' specialised knowledge, ideas, theories and practical knowledge to advise on issues ranging from incentive schemes in industry to appearing as an 'expert witness' in a court case.
- **The psychologist as toolmaker**: using and developing appropriate measures and techniques to help in the analysis and assessment of problems. These include questionnaire and interview schedules, computer-based ability and aptitude tests, and other *psychometric tests* (see Chapters 41 and 42).
- **The psychologist as detached investigator**: many applied psychologists carry out evaluation studies to assess the evidence for and against a particular point of view. This reflects the view of psychology as an objective science, which should use controlled experimentation whenever possible. The validity of this view is a recurrent theme throughout psychology (see, in particular, Chapter 3).
- **The psychologist as theoretician**: theories try to explain observed phenomena, suggesting possible underlying mechanisms or processes. They can suggest where to look for causes and how to design specific studies that will produce evidence for or against a particular point of view. Results from applied psychology can influence theoretical psychology, and vice versa.
- **The psychologist as agent for change**: applied psychologists are involved in helping people, institutions, and organisations, based on the belief that their work will change people and society for the better. However, some changes are much more controversial than others, such as the use of psychometric tests to determine educational and occupational opportunities, and the use of behaviour therapy and modification techniques to change abnormal behaviour (see Chapters 41, 45, 47 and 48).

(Based on Hartley and Branthwaite, 2000)

Clinical psychology

Clinical psychologists are the largest single group of psychologists, both in the UK (Coolican *et al.*, 1996) and the USA (Atkinson *et al.*, 1990). A related group is counselling psychologists, who tend to work with younger clients in colleges and universities rather than in hospitals.

Box 1.4 The major functions of the clinical psychologist

A clinical psychologist has had work experience as an assistant psychologist/research assistant, plus three years' postgraduate training (Doctorate in Clinical Psychology) (BPS, 2004). The clinical psychologist's functions include:

- assessing people with learning difficulties, administering psychological tests to brain-damaged patients, devising rehabilitation programmes for long-term psychiatric patients and assessing the elderly for their fitness to live independently
- planning and carrying out programmes of therapy, usually *behaviour therapy/modification* (both derived from learning theory principles), or *psychotherapy* (group or individual) in preference to, or in addition to, behavioural techniques (see Chapter 45)
- carrying out research into abnormal psychology, including the effectiveness of different treatment methods ('outcome' studies); patients are usually adults, many of whom will be elderly, in psychiatric hospitals, psychiatric wards in general hospitals, and psychiatric clinics
- involvement in community care, as psychiatric care in general moves out of the large psychiatric hospitals
- teaching other groups of professionals, such as nurses, psychiatrists and social workers.



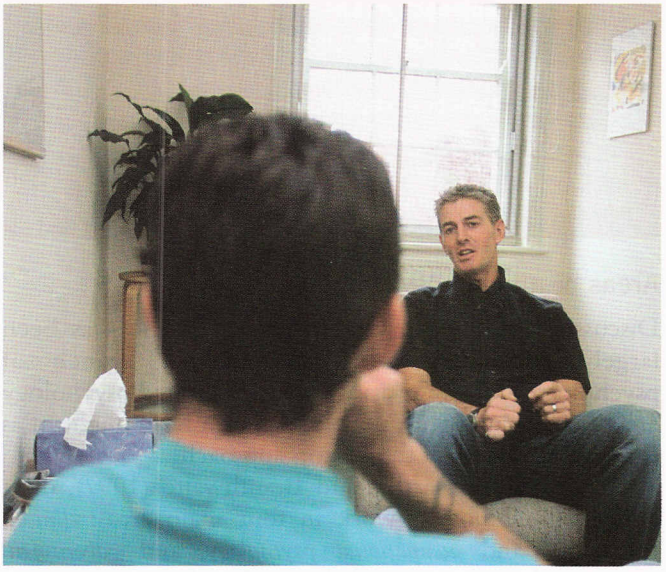
Clinical psychologists work largely in health and social care settings, including hospitals, health centres, community mental health teams, child and adolescent mental health services and social services. They usually work as part of a team with, for example, social workers, medical practitioners and other health professionals. In the UK, most work in the National Health Service (NHS), but some work in private practice.

Psychotherapy is usually carried out by psychiatrists (medically qualified doctors specialising in psychological medicine) or psychotherapists (who've undergone special training, including their own psychotherapy). In all its various forms, psychotherapy is derived from Freud's psychoanalysis (see Chapters 2 and 45), and is distinguished from both behavioural treatments and physical (somatic) treatments (those based on the medical model: see Chapters 43 and 45).

Counselling psychology

Counselling psychologists have either (a) an accredited MSc or Diploma or Doctorate in Counselling Psychology (three years' full-time or equivalent part-time), or (b) the British Psychological Society's (BPS's) Qualification in Counselling Psychology (three years' full-time independent study and practice).

They work within the NHS (in general and psychiatric hospitals and GP surgeries), in private hospitals and in private practice, within education in schools, colleges and universities, in industry and in public and private corporate institutions. They may work directly with individuals, couples, families and groups, or act as consultants (see Chapter 45).



Forensic psychology

This is a branch of psychology that attempts to apply psychological principles to the criminal justice system. It is rooted in empirical research and draws on cognitive, developmental, social and clinical psychology. One main focus is the study of criminal behaviour and its management, but in recent years research interests have expanded to include other areas, most notably those with a high media profile (such as stalking: see Chapter 46).

Forensic psychologists have either (a) an accredited MSc (one year full-time) in Forensic Psychology plus Stage 2 of the BPS's Diploma in Forensic Psychology, or (b) Stages 1 and 2 of the BPS's Diploma in Forensic Psychology (BPS, 2004). Like clinical psychologists, a crucial part of their work involves research and evaluation of what constitutes successful treatment.

The largest single employer of forensic psychologists in the UK is HM Prison Service (which includes the Home Office Research and Development Unit as well as prisons). Forensic psychologists also work in the health service (including rehabilitation units and special/secure hospitals for the criminally insane, such as Broadmoor and Rampton), the police service, young offender units

and the probation service. Some work in university departments or in private consultancy.

Box 1.5 Some recent areas of research interest among forensic psychologists

- Jury selection
- The presentation of evidence
- Eyewitness testimony (see Chapter 21)
- Improving the recall of child witnesses
- False memory syndrome and recovered memory (see Chapter 21)
- Offender profiling (see Chapter 46)
- Crime prevention (see Chapter 46)
- Devising treatment programmes (like anger management)
- Assessing the risk of releasing prisoners (see Chapter 46)

(From Coolican *et al.*, 1996)



Educational psychology

Traditionally, educational psychologists in England, Scotland and Northern Ireland have needed teacher training plus at least two years' teaching experience, and have gained an accredited postgraduate qualification in educational or child psychology (one year, full-time MSc). It's proposed that the teacher status and experience requirement will be dropped from 2005 (Dunsmuir and Turner, 2004). In Scotland, teaching qualifications or experience aren't required, but a two-year, full-time MSc course plus one year supervised practice as an educational psychologist are necessary (BPS, 2004).

Educational psychologists are mostly employed by local education authorities (LEAs), working in schools, colleges, child and family centre teams (previously called 'child guidance'), the Schools Psychological Service, hospitals, day nurseries, nursery schools, special schools (day and residential), and residential children's homes. Clients are aged up to 18 years, but most fall into the 5–16 age group. They regularly liaise with other professionals from the departments of education, health and social services. A growing number work as independent or private consultants (BPS, 2004).

Box 1.6 Some of the responsibilities of the educational psychologist

- Administering psychometric tests, particularly intelligence (or IQ) tests, as part of the assessment of learning difficulties (LDs) (see Chapters 40 and 41)
- Planning and supervising remedial teaching; research into teaching methods, the curriculum (subjects taught), interviewing and counselling methods and techniques
- Planning educational programmes for those with mental and physical impairments (including the visually impaired and autistic), and other groups of children and adolescents who aren't attending ordinary schools (special educational needs: see Chapter 40)
- Advising parents and teachers how to deal with children and adolescents with physical impairments, behaviour problems or LDs
- Teacher training



Occupational (work or organisational) psychology

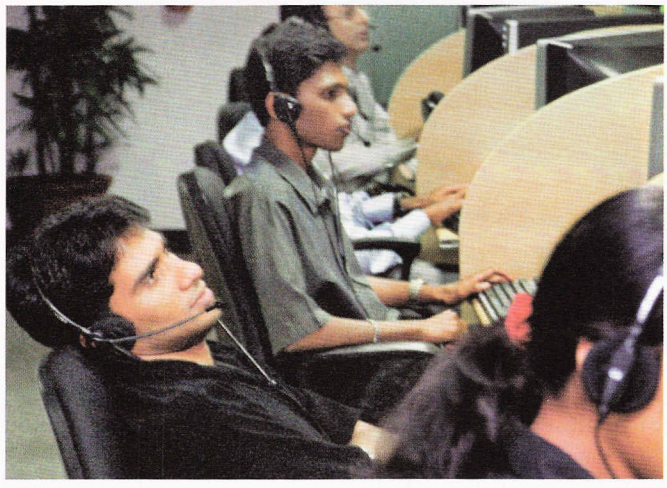
Occupational psychologists are involved in the selection and training of individuals for jobs and vocational guidance, including administration of aptitude tests and tests of interest. (This overlaps with the work of those trained in *personnel management*.)

Occupational psychologists have either (a) an accredited MSc in Occupational Psychology (one year, full-time) plus two years' supervised work experience, or (b) at least three years' full-time supervised work experience, including the BPS's Postgraduate Certificate in Occupational Psychology.

Box 1.7 Other responsibilities of the occupational psychologist

- Helping people who, for reasons of illness, accident or redundancy, need to choose and retrain for a new career (*industrial rehabilitation*)

- Designing training schemes, as part of *'fitting the person to the job'*; teaching machines and simulators (such as an aeroplane cockpit) often feature prominently in these schemes
- 'Fitting the job to the person' (*human engineering/engineering psychology* or *ergonomics*) – findings from experimental psychology are applied to the design of equipment and machinery in order to make the best use of human resources and to minimise accidents and fatigue; examples include telephone dialling codes (memory and attention) and the design of decimal coinage (tactile and visual discrimination)
- Advising on working conditions in order to maximise productivity (another facet of ergonomics – the study of people's efficiency in their working environments); occupational groups involved include computer/VDU operators, production line workers and air traffic controllers
- Helping the flow of communication between departments in government institutions, or 'industrial relations' in commerce and industry (*organisational psychology*); the emphasis is on the social, rather than the physical or practical, aspects of the working environment
- Helping to sell products and services through *advertising* and *promotions*; many psychologists are employed in the advertising industry, where they draw on what experimental psychologists have discovered about human motivation, attitudes and cognition (see Chapter 24)



Health psychology

This is one of the newer fields of applied psychology. Health psychologists have either (a) an accredited MSc in Health Psychology (one year, full-time) plus Stage 2 of BPS's qualification in Health Psychology, or (b) Stages 1 and 2 of the BPS's Health Psychology qualification.

Box 1.8 The breadth of health psychology

This involves the use of psychological principles to promote changes in people's attitudes, behaviour and thinking about health and illness (see Chapter 12). This may involve:

- the use of psychological theories and interventions to prevent damaging behaviours (such as smoking, drug abuse, poor diet), and to change health-related behaviour in community and workplace settings
- promoting and protecting health by encouraging behaviours such as exercise, healthy diet, teeth brushing, health checks/self-examination
- health-related cognitions – investigating the processes that can explain, predict and change health and illness behaviours
- processes influencing health care delivery – the nature and effects of communication between health care practitioners and patients, including interventions to improve communication, facilitate adherence (such as taking medication), prepare for stressful medical procedures, and so on
- psychological aspects of illness – looking at the psychological impact of acute and chronic illness on individuals, families and carers.

(Based on BPS, 2004)

Health psychologists work in a variety of settings, such as hospitals, academic health research units, health authorities, and university departments. They may deal with problems identified by health care agencies, including NHS Trusts and health authorities, health professionals (such as GPs, nurses, and rehabilitation therapists), and employers outside the health care system.



Chartered psychologists

Since 1987, the British Psychological Society (BPS), the only professional body for British psychologists incorporated by Royal Charter, has been authorised under its

Charter to keep a Register of Chartered Psychologists. Entry to the Register is restricted to members of the Society who've applied for registration and who have the necessary qualifications or experience to have reached a standard sufficient for professional practice in psychology without supervision (Gale, 1990).

All the applied areas described above (clinical, counselling, forensic, educational, occupational and health) lead to chartered status. This is also true of *Teaching and Research*, which requires either (a) a PhD in Psychology or (b), for teachers, at least three years' full-time experience as a teacher of psychology including the BPS's Diploma in the Applied Psychology of Teaching. As yet, sport psychology and psychotherapy don't grant chartered status (BPS, 2004).

ASK YOURSELF...

- What, if anything, has come as a surprise to you regarding what goes on in the name of 'psychology'?

The language of psychology

- As in all sciences, there's a special set of technical terms (jargon) to get used to, and this is generally accepted as an unavoidable feature of studying the subject. But over and above this jargon, psychologists use words that are familiar to us from everyday speech in a *technical way*, and it's in these instances that 'doing psychology' can become a little confusing.
- Some examples of this are 'behaviour' and 'personality'. For a parent to tell a child to 'behave yourself' is meaningless to a psychologist's ears: behaving is something we're all doing all the time (even when we're asleep). Similarly, to say that someone 'has no personality' is meaningless because, as personality refers to what makes a person unique and different from others, you cannot help but have one!
- Other terms that denote large portions of the research of experimental psychology, such as memory, learning and intelligence, are *hypothetical constructs* – that is, they don't refer to anything that can be directly observed but only *inferred* from observable behaviour (see above, page 5). They're necessary for explaining the behaviour being observed, but there's a danger of thinking of them as 'things' or 'entities' (*reification*), rather than as a way of trying to make sense of behaviour.
- Another way in which psychologists try to make sense of something is by comparing it with something else using an *analogy*. Often something complex is compared with something more simple. Since the 1950s and the development of computer science, the *computer analogy* has become very popular as a way of trying to understand how the mind works. As we saw earlier, the language of computer science has permeated the cognitive view of human beings as information processors (see Chapter 2, pages 25–27).
- A *model* is a kind of *metaphor*, involving a single, fundamental idea or image; this makes it less complex than a *theory* (although sometimes the terms are used interchangeably). A theory is a complex set of inter-related statements that attempt to explain certain observed phenomena. But in practice, when we refer to a particular theory (for example, Freud's or Piaget's), we often include *description* as well. Thomas (1985) defines a theory as 'an explanation of how the facts fit together', and he likens a theory to a lens through which to view the subject matter, filtering out certain facts and giving a particular pattern to those it lets in. A *hypothesis* is a testable statement about the relationship between two or more variables, usually derived from a model or theory (see Chapter 3).

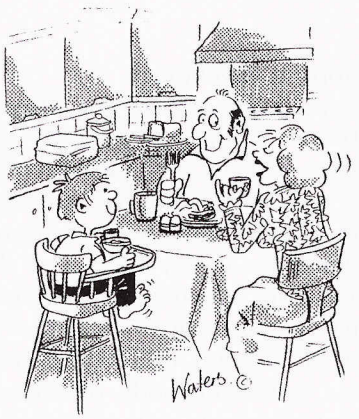
Psychology and common sense

ASK YOURSELF...

- What do you understand by the term 'common sense'?
- In what ways are we all psychologists?
- How might a 'common sense' understanding of human behaviour and experience differ from that of professional psychologists?

A common reaction among psychology students, when discussing the findings of some piece of research, is to say, 'But we knew that already' (implying that it's mere 'common sense'). Alternatively, they might say, 'But that's not what we normally understand by such-and-such', implying that the research is in some way wrong. So psychology often seems to be in a no-win situation: either it merely confirms common sense or it contradicts it, in which case psychology seems to be the less credible of the two.

We all consider we know something about people and why they behave as they do, and so there's a sense in which we're all psychologists (see Chapters 22 and 23).



"Ok, let's try reverse psychology. Andrew ... don't eat all your dinner up!"



The Last Evening, by Tissot

This is a theme explored at length by Joynson in *Psychology and Common Sense* (1974). He begins by stating that human beings aren't like the objects of natural science – we understand ourselves and can already predict and control our behaviour to a remarkable extent. This creates for the psychologist a paradoxical task: what kind of understanding can you seek of a creature that already understands itself?

For Joynson, the fundamental question is, 'If the psychologist did not exist, would it be necessary to invent him?' Conversely, for Skinner (1971), 'it is science or nothing' and Broadbent (1961) also rejects the validity of our everyday understanding of ourselves and others (Joynson calls this 'the behaviourists' prejudice'). Yet we cannot help but try to make sense of our own and other people's behaviour (by virtue of our cognitive abilities and the nature of social interaction), and to this extent we're all psychologists. Heather (1976) points to ordinary language as embodying our 'natural' understanding of human behaviour: as long as human beings have lived they've been psychologists, and language gives us an 'elaborate and highly refined conceptual tool, developed over thousands of years of talking to each other'.

Formal vs informal psychology

Legge (1975) and others resolve this dilemma by distinguishing between *formal* and *informal psychology* (or professional versus amateur, scientific versus non-scientific).

Our common sense, intuitive or 'natural' understanding is unsystematic and doesn't constitute a body of knowledge. This makes it very difficult to 'check' an individual's 'theory' about human nature, as does the fact that each individual has to learn from his/her own experience. So part of the aim of formal psychology is to provide such a systematic body of knowledge, which represents the unobservable basis of our 'gut reactions'.

Yet it could be argued that informal psychology *does* provide a 'body of knowledge' in the form of proverbs or sayings or folk wisdom, handed down from generation to generation (for example, 'Birds of a feather flock together', 'Too many cooks spoil the broth' and 'Don't cross your bridges before you come to them'). While these may contain at least a grain of truth, for each one there's another proverb that states the opposite ('Opposites attract', 'Many hands make light work' and 'Time and tide wait for no man' or 'Nothing ventured, nothing gained').

However, formal psychology may help us reconcile these contradictory statements. For example, there's evidence to support both proverbs in the first pair (see Chapter 28). Formal psychology tries to identify the conditions under which each statement applies, and they *appear* contradictory if we assume that only one or the other can be true! In this way, scientific psychology throws light on our everyday, informal understanding, rather than negating or invalidating it.

Legge (1975) believes that most psychological research should indeed be aimed at demonstrations of 'what we know already', but that it should also aim to go one step further. Only the methods of science, he believes, can provide us with the public, communicable body of knowledge that we're seeking. According to Allport (1947), the aim of science is 'Understanding, prediction and control above the levels achieved by unaided common sense', and this is meant to apply to psychology as much as to the natural sciences (see Chapters 3 and 42).

CONCLUSIONS

Psychology is a diverse discipline. Psychologists investigate a huge range of behaviours and mental or cognitive processes. There's a growing number of applied areas, in which theory and research findings are brought to bear in trying to improve people's lives in a variety of ways. During the course of its life as a separate discipline, definitions of psychology have changed quite fundamentally, reflecting the influence of different theoretical approaches. Rather than having to choose between our common-sense understanding of people and the 'scientific' version, psychology as a scientific discipline can be seen as complementing and illuminating our 'everyday' psychological knowledge.

CHAPTER SUMMARY

- Early psychologists, such as Wundt, attempted to study the mind through **introspection** under controlled conditions, aiming to analyse conscious thought into its basic elements (**structuralism**).
- Watson rejected introspectionism's **subjectivity** and replaced it with **behaviourism**. Only by regarding people as complex animals, using the methods of natural science and studying observable behaviour, could psychology become a true science.

- **Gestalt psychologists** criticised both structuralism and behaviourism, advocating that 'the whole is greater than the sum of its parts'. Freud's **psychoanalytic theory** was another major alternative to behaviourism.
- Following the **cognitive revolution**, people came to be seen as **information-processors**, based on the **computer analogy**. Cognitive processes, such as perception and memory, became an acceptable part of psychology's subject matter.
- **Academic** psychologists are mainly concerned with conducting **research** (**pure or applied**), which may focus on underlying **processes/mechanisms** or on the **person**.
- The **process approach** consists of **physiological psychology**, **cognitive processes** and **comparative psychology**, while the **person approach** covers **developmental** and **social psychology** and **individual differences**.
- While the process approach is largely confined to **laboratory experiments** using **non-humans**, the person approach makes greater use of field studies and **non-experimental** methods involving **humans**. The two approaches see species differences as **quantitative** or **qualitative** respectively.
- Most **applied psychologists** work in **clinical**, **counselling**, **forensic**, **educational** or **occupational psychology**. Newer fields include **health** and **sport** psychology.
- There's a sense in which we're all psychologists, creating a dilemma for psychologists: are they necessary? One solution is to distinguish between **informal/common-sense** and **formal/scientific psychology**. The latter aims to go beyond common-sense understanding and to provide a public, communicable body of knowledge.

The behaviourist approach
- Basic principles and assumptions
- Theoretical contributions
- Practical contributions
- An evaluation of behaviourism

The psychodynamic approach
- Basic principles and assumptions
- Theoretical contributions
  - *Some major alternative psychodynamic theories*
- Practical contributions
- An evaluation of the psychodynamic approach

The humanistic approach
- Basic principles and assumptions
- Theoretical contributions
- Practical contributions
- An evaluation of the humanistic approach

The cognitive approach
- Basic principles and assumptions
- Theoretical contributions
- Practical contributions
- An evaluation of the cognitive approach

The social constructionist approach
- Basic principles and assumptions
- Theoretical contributions and an evaluation of social constructionism
  - *Social constructionism and social representation theory*
  - *Social constructionism and feminist psychology*

The evolutionary approach
- Basic principles and assumptions
- Theoretical contributions
  - *Is language an instinct?*
- An evaluation of EP
  - *Our hunter-gatherer past*
  - *Phylogeny and ontogeny*
  - *Violent stepfathers and the problem of unfalsifiability*

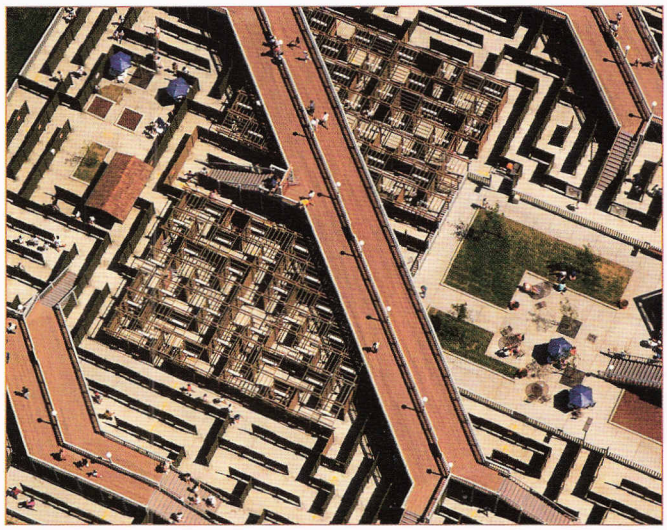
Conclusions

Chapter summary

Links with other topics/chapters

2

THEORETICAL APPROACHES TO PSYCHOLOGY



INTRODUCTION AND OVERVIEW

Different psychologists make different assumptions about what particular aspects of a person are worthy of study, and this helps to determine an underlying model or image of what people are like. In turn, this model or image determines a view of psychological normality, the nature of development, preferred methods of study, the major cause(s) of abnormality, and the preferred methods and goals of treatment.

An approach is a perspective that isn't as clearly outlined as a theory and that:

> ... provides a general orientation to a view of humankind. It says, in effect, we see people as operating according to these basic principles and we therefore see explanations of human

behaviour as needing to be set within these limits and with these or those principles understood. (Coolican *et al.*, 1996)

As we shall see, all the major approaches include two or more distinguishable theories, but within an approach they share certain basic principles and assumptions that give them a distinct 'flavour' or identity. The focus here is on the *behaviourist*, *psychodynamic*, *humanistic*, *cognitive*, *social constructionist* and *evolutionary* approaches.

THE BEHAVIOURIST APPROACH

Basic principles and assumptions

As we saw in Chapter 1, Watson (1913) revolutionised psychology by rejecting the introspectionist approach and advocating the study of observable behaviour. Only by modelling itself on the natural sciences could psychology legitimately call itself a science. Watson was seeking to transform the very subject matter of psychology (from 'mind' to 'behaviour') and this is often called *methodological behaviourism*. According to Skinner (1987):

'Methodological' behaviourists often accept the existence of feelings and states of mind, but do not deal with them because they are not public and hence statements about them are not subject to confirmation by more than one person.

In this sense, what was revolutionary when Watson (1913) first delivered his 'behaviourist manifesto' (see Box 3.2, page 39) has become almost taken for granted, 'orthodox' psychology. It could be argued that all psychologists are methodological behaviourists (Blackman, 1980). Belief in the importance of empirical methods, especially the experiment, as a way of collecting data about humans (and non-humans), which can be quantified and statistically analysed, is a major feature of *mainstream psychology* (see Chapter 3). By contrast, as Skinner (1987) asserts:

'Radical' behaviourists ... recognise the role of private events (accessible in varying degrees to self-observation and physiological research), but contend that so-called mental activities are metaphors or explanatory fictions and that behaviour attributed to them can be more effectively explained in other ways.

For Skinner, these more effective explanations of behaviour come in the form of the principles of reinforcement derived from his experimental work with rats and pigeons. What's 'radical' about Skinner's *radical behaviourism* is the claim that feelings, sensations and other private events cannot be used to explain behaviour but are to *be explained* in an analysis of behaviour. Methodological behaviourism proposes to *ignore* such inner states (they're *inaccessible*). But Skinner *rejects* them as variables that can explain behaviour (they're *irrelevant*) and argues that they can be translated into the language of reinforcement theory (Garrett, 1996).

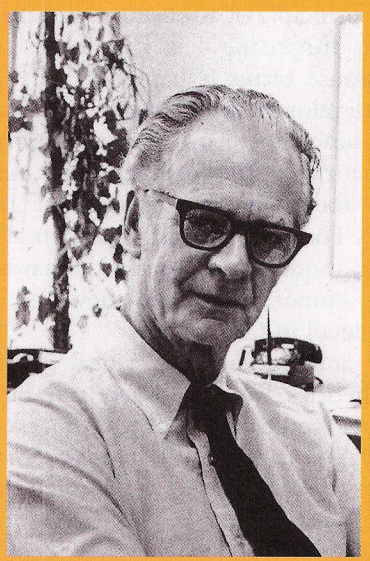
According to Nye (2000), Skinner's ideas are also radical because he applied the same type of analysis to covert behaviour (thoughts and feelings) occurring 'within the skin' as he did to overt, publicly observable, behaviours. He stressed the importance of identifying *functional relations* (cause-and-effect connections) between environmental conditions and behaviours. As Nye (2000) points out:

Radical behaviourists are able to describe with considerable detail various observable factors that affect learning, thereby buttressing the arguments that human behaviour is controlled in many ways by circumstances that can be objectively specified and manipulated.

Given this important distinction between methodological and radical behaviourism, we need to consider some principles and assumptions that apply to behaviourism in general.

Box 2.1 Basic principles and assumptions made by the behaviourist approach

- Behaviourists emphasise the role of environmental factors in influencing behaviour, to the near exclusion of innate or inherited factors (see Chapter 50). This amounts essentially to a focus on learning. The key form of learning is conditioning, either classical (Pavlovian or respondent), which formed the basis of Watson's behaviourism, or operant (instrumental), which is at the centre of Skinner's radical behaviourism. Classical and operant conditioning are often referred to (collectively) as learning theory, as opposed to 'theories of learning', which usually imply theories other than conditioning theories – that is, non-behaviourist theories (see Chapter 11).



B.F. Skinner (1904–90)

- Behaviourism is often referred to as 'S–R' psychology ('S' standing for 'stimulus' and 'R' for 'response'). Both classical and operant conditioning explain observable

behaviour (responses) in terms of environmental events (stimuli), but they define the stimulus and response relationship in fundamentally different ways. Only in classical conditioning is the stimulus seen as triggering a response in a predictable, automatic way, and this is what's conveyed by 'S–R' psychology. It is, therefore, a mistake to describe operant conditioning as an 'S–R' approach (see Chapter 11).

- Both types of conditioning are forms of *associative learning*, whereby associations or connections are formed between stimuli and responses that didn't exist before learning took place.
- Part of Watson's rejection of introspectionism was his belief that it invoked too many vague concepts that are difficult, if not impossible, to define and measure. According to the *law of parsimony* (or 'Occam's razor'), the fewer assumptions a theory makes, the better (more 'economical' explanations are superior).
- The mechanisms proposed by a theory should be as simple as possible. Behaviourists stress the use of *operational definitions* (defining concepts in terms of observable, measurable, events).
- The aim of a science of behaviour is to *predict* and *control* behaviour.

Theoretical contributions

Behaviourism made a massive contribution to psychology, at least up to the 1950s, and explanations of behaviour in conditioning terms recur throughout this book. For example, apart from a whole chapter on learning and conditioning (Chapter 11), imagery as a form of organisation in memory and as a memory aid is based on the principle of association, and the interference theory of forgetting is largely couched in stimulus–response terms (Chapter 17). Language, moral and gender development (Chapters 19, 35 and 36) have all been explained in terms of conditioning, and some influential theories of the formation and maintenance of relationships focus on the concept of reinforcement (Chapter 28). The behaviourist approach also offers one of the major models of abnormal behaviour (Chapter 45). Finally, Skinner's notorious views on free will are discussed in detail in Chapter 49.

Theorists and researchers critical of the original, 'orthodox' theories have modified and built on them, making a huge contribution in the process. Noteworthy examples are Tolman's (1948) *cognitive behaviourism* (see Chapter 11) and *social learning theory* (see Chapters 29, 35 and 36).

ASK YOURSELF...

- Dip into some of these chapters, just to familiarise yourself with the range of topic areas to which the behaviourist approach has been applied (and to help you find your way round the book).

Practical contributions

Methodological behaviourism, with its emphasis on experimentation, operational definitions, and the measurement of observable events (see Box 2.1), has been a major influence on the practice of scientific psychology in general (what Skinner, 1974, called the 'science of behaviour'). This is quite unrelated to any views about the nature and role of mental events. Other, more 'tangible' contributions include:

- *behaviour therapy* and *behaviour modification* (based on classical and operant conditioning respectively) as major approaches to the treatment of abnormal behaviour (see Chapter 45) and one of the main tools in the clinical psychologist's 'kit bag' (see Box 1.4, pages 8–9)
- *behavioural neuroscience* is an interdisciplinary field of study, using behavioural techniques to understand brain function and neuroscientific techniques to throw light on behavioural processes; while many believe that behaviour can be explained by (*reduced* to) brain processes (see Chapter 49), the evidence shows that each is dependent on the other (Leslie, 2002)
- *behavioural pharmacology* involves the use of *schedules of reinforcement* (see Chapter 11) to assess the behavioural effects of new drugs that modify brain activity; most importantly, the research has illustrated how many behavioural effects of drugs are determined as much by the current behaviour and reinforcement contingencies as by the effects of the drug on the brain (Leslie, 2002: see Chapter 8)
- *biofeedback* as a non-medical treatment for stress-related symptoms, derived from attempts to change rats' autonomic physiological functions through the use of operant techniques (see Chapter 12)
- *teaching machines* and *programmed learning*, which now commonly take the form of *computer-assisted learning* (CAL).

An evaluation of behaviourism

In addition to the criticisms – both general and specific – that occur in the particular chapters where behaviourist explanations are presented, two evaluative points will be made here:

1. the 'Skinner box' is an 'auto-environmental chamber', in which rats' and pigeons' environments can be totally controlled by the experimenter (see Chapter 11). This is central to Skinner's analysis of behaviour. A rat pressing a lever was intended to be equivalent to a cat operating an escape latch in Thorndike's puzzle box (1898), so counting the number of lever presses (the *response rate*) became the standard measure of operant learning. Despite Skinner's claim that he doesn't have a *theory*, 'the response' in operant conditioning has largely considered only the *frequency* of

behaviour, ignoring intensity, duration and quality. As Glassman (1995) observes:

> While the focus on frequency was a practical consideration, it eventually became part of the overall conceptual framework as well – a case of research methods directing theory.

But in everyday life, frequency isn't always the most meaningful aspect of behaviour. For example, should we judge an author's worth by how many books s/he publishes, rather than their content?

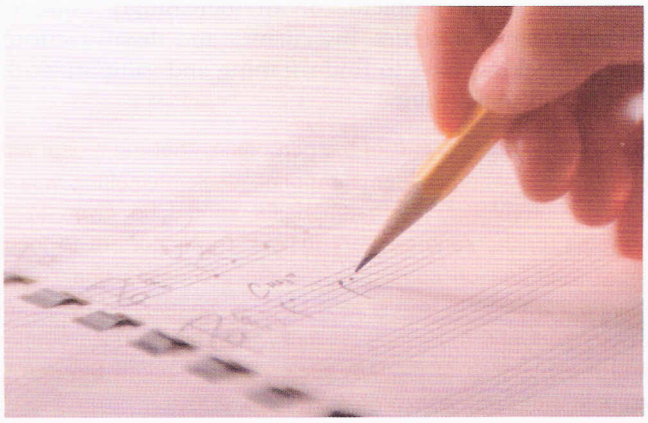
ASK YOURSELF...

- Do you agree with Skinner's claim that thoughts and other 'covert behaviours' don't *explain* our behaviour (because they cannot *determine* what we do)?

2. Skinner's claim that human behaviour can be predicted and controlled in the same way as the behaviour of non-humans is usually accepted only by other behaviour analysts. Possessing language allows us to communicate with each other and to think about 'things' that have never been observed (and may not even exist), including rules, laws and principles (Garrett, 1996). While these can only be expressed in or thought about in words, much of our behaviour is governed by them. According to Garrett, when this happens:

> ... behaviour is now shaped by what goes on inside their [people's] heads ... and not simply by what goes on in the external environment.

So, what people *think* is among the important variables determining what they do and say, the very *opposite* of what Skinner's radical behaviourism claims.



Behaviourists find it very difficult to explain creativity or novel behaviour of any kind

However, behaviour analysts recognise the limitations of their approach. For example, Leslie (2002) admits that:

> ... operant conditioning cannot provide a complete account of psychology from a behavioural perspective, even in principle.

Similarly, O'Donohue and Ferguson (2001) acknowledge that the science of behaviour cannot account for creativity, as in music, literature and science.

THE PSYCHODYNAMIC APPROACH

The term 'psychodynamic' denotes the active forces within the personality that motivate behaviour, and the inner causes of behaviour (in particular the *unconscious conflict* between the different structures that compose the whole personality). While Freud's was the original psychodynamic theory, the approach includes all those theories based on his ideas, such as those of Jung (1964), Adler (1927) and Erikson (1950). Freud's *psychoanalytic theory* is psychodynamic, but the psychodynamic theories of Adler, Jung and Erikson aren't psychoanalytic. So the two terms *aren't* synonymous. However, because of their enormous influence, Freud's ideas will be emphasised in the rest of this section.

Basic principles and assumptions

Freud's concepts are closely interwoven, making it difficult to know where a description of them should begin (Jacobs, 1992). Fortunately, Freud himself stressed the acceptance of certain key theories as essential to the practice of *psychoanalysis*, the form of psychotherapy he pioneered and from which most others are derived (see page 22).

Box 2.2 The major principles and assumptions of psychoanalytic theory

- Much of our behaviour is determined by *unconscious* thoughts, wishes, memories, and so on. What we're consciously aware of at any one time represents the tip of an iceberg: most of our thoughts and ideas are either not accessible at that moment (*pre-conscious*) or are totally inaccessible (*unconscious*). These unconscious thoughts and ideas can become conscious through the use of special techniques, such as *free association*, *dream interpretation* and *transference*, the cornerstones of psychoanalysis (see Chapter 45).
- Much of what's unconscious has been made so through *repression*, whereby threatening or unpleasant experiences are 'forgotten' (see Chapter 21, pages 366–370). They become inaccessible, locked away from our conscious awareness. This is a major form of *ego defence* (see Chapter 42). Freud singled out repression as a special cornerstone 'on which the whole structure of psychoanalysis rests. It is the most essential part of it' (Freud,

1914). Repression is closely related to *resistance*, interpretation of which is another key technique used in psychoanalysis (see Chapter 45).

- According to the theory of *infantile sexuality*, the sexual instinct or drive is active from birth and develops through a series of five *psychosexual stages*. The most important of these is the *phallic stage* (spanning the ages 3–5/6), during which all children experience the Oedipus complex (see Chapter 35). In fact, Freud used the German word *'Trieb'*, which translates as 'drive', rather than *'Instinkt'*, which was meant to imply that experience played a crucial role in determining the 'fate' of sexual (and aggressive) energy (see Box 50.2, page 902).
- Related to infantile sexuality is the general *impact of early experience* on later personality (see Chapter 32). According to Freud (1949):

> *It seems that the neuroses are only acquired during early childhood (up to the age of six), even though their symptoms may not make their appearance until much later ... the child is psychologically father of the man and ... the events of its first years are of paramount importance for its whole subsequent life.*



Sigmund Freud (1856–1939)

Theoretical contributions

As with behaviourist accounts of conditioning, many of Freud's ideas and concepts have become part of mainstream psychology's vocabulary. You don't have to be a 'Freudian' to use concepts such as 'repression', 'unconscious', and so on, and many of the vast number of studies of different aspects of the theory have been conducted by critics hoping to discredit it (such as Eysenck, 1985; Eysenck and Wilson, 1973).

Like behaviourist theories, Freud's can also be found throughout psychology as a whole. His contribution is extremely rich and diverse, offering theories of motivation (see Chapter 9), dreams and the relationship between sleep and dreams (Chapter 7), forgetting (Chapter 21), attachment and the effects of early experience (Chapter 32), moral and gender development (Chapters 35 and 36), aggression (Chapter 29), and abnormality (Chapter 45). Psychoanalytic theory has also influenced Gould's (1978, 1980) theory of the evolution of adult consciousness (Chapter 38) and Adorno *et al.*'s (1950) theory of the authoritarian personality (a major account of prejudice: see Chapter 25).

Finally, and as noted earlier, Freud's theories have stimulated the development of alternative theories, often resulting from the rejection of some of his fundamental principles and assumptions, but reflecting his influence enough for them to be described as psychodynamic.

ASK YOURSELF...

- Repeat the exercise suggested for the behaviourist approach (see page 18).

Some major alternative psychodynamic theories

- *Ego psychology*, promoted by Freud's daughter, Anna, focused on the mechanisms used by the *ego* to deal with the world, especially the ego defence mechanisms. Freud, by contrast, stressed the influence of the *id*'s innate drives (especially sexuality and aggression) and is often described as an instinct theorist (but see the third point in Box 2.2). The ego, as well as the id, originates in basic human inheritance and has its own developmental course. It uses neutralised (non-sexual) energy, which makes possible an interest in objects and activities that aren't necessarily related to underlying sexual and aggressive drives.

According to Nye (2000), the increased attention given to an independent ego has probably resulted partly from a change in the types of patients psychoanalysts are treating. In recent years, patients are more likely to be troubled by the problems of an increasingly complex society (vague anxieties, insecurities and dissatisfaction), and are seeking ways to find meaning and value in work, family and social roles:

> Since the ego is the part of the personality that must deal with the external world in some rational, decision-making way, it seems natural that more emphasis should be given to it. Perhaps for the contemporary patient it is important to focus more attention on conscious thought processes and coping mechanisms; he or she is less likely to be plagued by unconscious guilt and repressed sexuality than by the uncertainties and rootlessness of modern society that requires the ego to grapple with existential problems. (Nye, 2000)

- Erik Erikson, trained by Anna Freud as a child psychoanalyst, also stressed the importance of the ego,

as well as the influence of social and cultural factors on individual development. He pioneered the *lifespan approach* to development, proposing eight *psychosocial stages*, in contrast with Freud's five psychosexual stages that end with physical maturity (see Chapters 37 and 38).

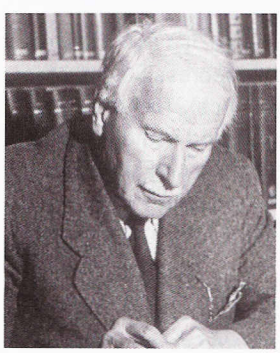
- Two of Freud's original 'disciples', Carl Jung and Alfred Adler, broke ranks with Freud and formed their own 'schools' (*analytical psychology* and *individual psychology*, respectively). Jung attached relatively little importance to childhood experiences (and the associated personal unconscious) but considerable importance to the *collective* (or *racial*) *unconscious*, which stems from the evolutionary history of human beings as a whole (see Chapter 42).
- Like Jung, Adler rejected Freud's emphasis on sexuality, stressing instead the *will to power* or *striving for superiority*, which he saw as an attempt to overcome feelings of inferiority faced by all children as they grow up. He also shared Jung's view of the person as an *indivisible unity* or whole, and Erikson's emphasis on the *social* nature of human beings.
- Melanie Klein (1932) is often seen as a key transitional figure between Freud's instinct theory and the *object relations school* (see Box 2.3). Like Anna Freud, she adapted Freud's techniques (such as pioneering play therapy) in order to tap a young child's unconscious, and maintained that the superego and Oedipus complex appear as early as the first and second years of life (see Chapter 35).



Anna Freud (1895–1982)



Erik Erikson (1902–1994)



Carl Gustav Jung (1875–1961)



Alfred Adler (1870–1937)

Box 2.3 Object relations theory

- The *object relations school* (the 'British school') was greatly influenced by Klein's emphasis on the infant's earliest (pre-Oedipal) relationships with its mother. It places far less emphasis on the role of instincts and more on the *relationship with particular love objects* (especially the mother), seeing early relationships as crucial for later patterns of relationships with others.
- Fairbairn (1952), for example, saw the aim of the libido as *object-seeking* (as opposed to pleasure-seeking), and this was extended by Bowlby (1969) in his *attachment theory* (see Chapter 32).
- According to Nye (2000):

  Although both object relations theory and Freudian theory are concerned with childhood experiences and the inner world of the person, the former puts more emphasis on discrepancies between inner-world and real-world persons and situations. The latter puts more emphasis on the role of factors such as instinctual drives and unresolved Oedipus conflicts ...

- Object relations theory isn't a single, widely accepted theory. Rather, it refers to a number of separate ideas proposed by different theorists. However, they all stress that internal images ('representations') of one's self and of 'objects' (a technical term usually denoting another person toward whom we direct emotion and action – *significant others*) can have powerful effects on our relationships with others.
- Mahler (1975) and Winnicott (1965) stress the movement from the newborn's absolute dependence to the independence and autonomy of adults as the primary and lifelong developmental task. Development proceeds from *symbiotic fusion* with the mother, through various stages of partial differentiation of the self and other, to a state of *increased individuation* and independence (see Chapter 38). The internalised images of others (objects) in the infant (and the psychotic adult: see Chapter 44) are primitive, engulfing, devouring and otherwise menacing. Only when separation from the mother has been successfully achieved are we capable of empathising with others and seeing them as they really are (rather than projections of our primitive fantasies).

(Based on Holmes, 1993; Nye, 2000; Zeldow, 1995)

Practical contributions

The current psychotherapy scene is highly diverse, with only a minority using Freudian techniques (see Chapter 45), but, as Fancher (1996) points out:

Most modern therapists use techniques that were developed either by Freud and his followers or by dissidents in explicit reaction against his theories. Freud remains a dominating figure, for or against whom virtually all therapists feel compelled to take a stand.

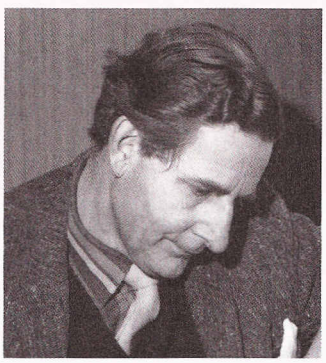
Both Rogers, the major humanistic therapist (see below) and Wolpe, who developed *systematic desensitisation* (a major form of behaviour therapy: see Chapter 45), were originally trained in Freudian techniques. Perls, the founder of *Gestalt therapy*, Ellis, the founder of *rational emotive therapy* (RET) (see Chapter 45) and Berne, who devised *transactional analysis* (TA) were also trained psychoanalysts.

Even Freud's fiercest critics concede his influence, not just within world psychiatry but in philosophy, literary criticism, history, theology, sociology, and art and literature generally. Freudian terminology is commonly used in conversations between therapists well beyond Freudian circles, and his influence is brought daily to therapy sessions as part of the cultural background and experience of nearly every client (Jacobs, 1992).

Many mental health practitioners (including psychotherapists, counsellors and social workers), although not formally trained as psychoanalysts, have incorporated elements of Freudian thought and technique into their approaches to helping their patients (Nye, 2000).

An evaluation of the psychodynamic approach

- A criticism repeatedly made of Freudian (and other psychodynamic) theories is that they're unscientific because they're *unfalsifiable* (incapable of being disproved). For example, if the Freudian prediction that 'dependent' men will prefer big-breasted women is confirmed, then the theory is supported. However, if such men actually prefer small-breasted women (Scodel, 1957), Freudians can use the concept of *reaction formation* (an ego defence mechanism: see Table 42.6, page 749) to argue that an unconscious fixation with big breasts may manifest itself as a conscious preference for the opposite, a clear case of 'heads I win, tails you lose' (Eysenck, 1985; Popper, 1959).



Hans J. Eysenck (1916–1997)

- However, it's probably a mistake to see reaction formation as typical of Freudian theory as a whole. According to Kline (1984, 1989), for example, the theory comprises a collection of hypotheses, some of which are more easily tested than others, some of which are more central to the theory than others, and some of which have more supporting evidence than others. Also, different parts of the theory have been tested using different methods (see Chapter 42, pages 750–752).
- According to Zeldow (1995), the history of science reveals that those theories that are the richest in explanatory power have proved the most difficult to test empirically. For example, Newton's Second Law couldn't be demonstrated in a reliable, quantitative way for 100 years, and Einstein's general theory of relativity is still untestable. Eysenck, Popper and others have criticised psychoanalytic theory for being untestable. But even if this were true:

> ... the same thing could (and should) be said about any psychological hypotheses involving complex phenomena and worthy of being tested...psychoanalytic theories have inspired more empirical research in the social and behavioural sciences than any other group of theories ... (Zeldow, 1995)

RESEARCH UPDATE: 2.1 Evidence supporting Freudian theory

- Fisher and Greenberg (1996) conducted an extensive reappraisal of studies of psychoanalytic theory carried out up to the early 1990s. Along with Kline (1989), they argue that Freud's theory should be evaluated in terms of a series of specific hypotheses (or mini-theories), rather than as a whole. They also believe that what should be considered are overall trends across studies.
- Fisher and Greenberg concluded that there's evidence to support Freud's notion of oral and anal personality tendencies (see Chapter 42), and some aspects of his ideas on the origins of depression and paranoia (see Chapters 44 and 45). But they found only weak and indirect support for the notion of the Oedipal conflict, and no support for their impact on later development, or for his views on women's sexuality and how their development differs from men's (see Chapters 35 and 47).
- While their review is extremely broad, it's not comprehensive (for example, it doesn't cover repression and other defence mechanisms, or transference). The strength of the evidence presented is variable and sometimes indirect, and where it's supportive it rests on Fisher and Greenberg's interpretation of the results (Andrews & Brewin, 2000). However, for Zeldow (1995) the mere existence of such reviews:

> *... gives the lie to the notion that all psychoanalytic ideas are too vague or abstruse to be tested scientifically.*

- According to Andersen & Miranda (2000), *transference* is a normal, non-pathological process that's part of our normal mechanisms of social interaction. They claim that their research represents the first experimental demonstration of transference. Within the framework of social cognition, they've shown that mental representations of significant others, developed in one's family and elsewhere, are linked to representations of self in memory. These representations are 'heavily laden with affect and motivation', and are often activated and used in responding to new people that resemble a significant other. Their experimental procedure in effect assesses transference in terms of how much participants 'go beyond the information given' (Bruner, 1957) about the new person (see Chapters 15, 22 and 23).
- According to Reason (2000), Freud was probably not right in asserting that (nearly) all slips (of the tongue) are in some way intended. But he was certainly correct in claiming that 'Freudian slips' represent minor eruptions of unconscious processing (see Chapter 42). Instead of taking a strictly psychoanalytic interpretation of 'unconscious', Reason prefers one that relates to processes that aren't directly accessible to consciousness, i.e. automatic processing or habitual performance (see Chapter 13).
- Similarly, much of modern cognitive psychology and neuropsychology (see Chapter 4) is consistent with the Freudian view that behaviour isn't dependent on conscious experience (Power, 2000). For example, modern theories of the display of facial affect explicitly recognise a role for the conscious and unconscious control of behaviour (Ekman, 1986: see Chapter 10). Another example is blindsight (Weiskrantz, 1986: see Case Study 5.1, page 85). According to Power (2000):

  ... Whereas cognitive psychology has emphasised the co-operation between conscious and automatic processes (essential, for example, whilst driving), psychoanalysis has always emphasised conflict instead. The most recent models in psychology have come to consider both co-operation and conflict between conscious and unconscious processes.

◎ Freud's theory provides methods and concepts that enable us to interpret and 'unpack' underlying *meanings* (it has great *hermeneutic strength*). Popper's and Eysenck's criticism above helps to underline the fact that these meanings (both conscious and unconscious) cannot be measured in any precise way. Freud offers a way of understanding that's different from theories that are easily testable, and it may actually be *more* appropriate for capturing the nature of human experience and action (Stevens, 1995: see Chapter 3). According to Fancher (1996):

> Although always controversial, Freud struck a responsive chord with his basic image of human beings as creatures in conflict, beset by irreconcilable and often unconscious demands from within as well as without. His ideas about repression, the importance of early experience and sexuality, and the inaccessibility of much of human nature to ordinary conscious introspection have become part of the standard Western intellectual currency.

◎ Reason (2000) believes it's time to re-acknowledge Freud's greatness as a psychologist. Like James, he had a rare gift for describing and analysing the phenomenology of mental life. Perhaps Freud's greatest contribution was in recognising that apparent trivia we now commonly call 'Freudian slips' are 'windows on the mind'. According to Kline (1998):

> ... after 100 years, Freudian theory cannot be uncritically accepted just as it cannot be totally rejected. However ... Freudian theory contains some profound observations and understanding of human behaviour. These must be incorporated into any adequate human psychology, not only its theory but also its methods ...

THE HUMANISTIC APPROACH

Basic principles and assumptions

As we noted earlier, Rogers, a leading humanistic psychologist (and therapist), was trained as a psychoanalyst. Although the term 'humanistic psychology' was coined by Cohen (1958), a British psychologist, this approach emerged mainly in the USA during the 1950s. Maslow (1968), in particular, gave wide currency to the term 'humanistic' in America, calling it a 'third force' (the other two being behaviourism and Freudianism). However, Maslow didn't reject these approaches but hoped to unify them, thus integrating both subjective and objective, the private and public aspects of the person, and providing a complete, holistic psychology.

Box 2.4 Some basic principles and assumptions of the humanistic approach

- Both the psychoanalytic and behaviourist approaches are *deterministic*. People are driven by forces beyond their control, either unconscious forces from within (Freud) or reinforcements from outside (Skinner). Humanistic psychologists believe in free will and people's ability to choose how they act (see Chapter 49).
- A truly scientific psychology must treat its subject matter as fully human, which means acknowledging individuals as interpreters of themselves and their world. Behaviour, therefore, must be understood in terms of the individual's *subjective experience*, from the perspective of the actor (a *phenomenological approach*, which explains why this is sometimes called the 'humanistic-phenomenological' approach). This contrasts with the positivist approach of the natural sciences, which tries to study

people from the position of a detached observer. Only the individual can explain the meaning of a particular behaviour and is the 'expert' – not the investigator or therapist.

- Maslow argued that Freud supplied the 'sick half' of psychology, through his belief in the inevitability of conflict, neurosis, innate self-destructiveness, and so on, while he (and Rogers) stressed the 'healthy half'. Maslow saw *self-actualisation* at the peak of a hierarchy of needs (see below and Chapter 9), while Rogers talked about the *actualising tendency*, an intrinsic property of life, reflecting the desire to grow, develop and enhance our capacities. A fully functioning person is the ideal of growth. Personality development naturally moves towards healthy growth (unless it's blocked by external factors), and should be considered the norm (see Chapter 42).
- Maslow's contacts with Wertheimer and other Gestalt psychologists (see Chapter 15) led him to stress the importance of understanding the *whole person*, rather than separate 'bits' of behaviour.

(Based on Glassman, 1995)

Theoretical contributions

Maslow's *hierarchy of needs* (see Chapter 9, pages 140–142) distinguishes between motives shared by both humans and non-humans and those that are uniquely human, and can be seen as an extension of the psychodynamic approach. Freud's id would represent physiological needs (at the hierarchy's base), Horney (a major critic of the male bias in Freud's theory: see Chapter 35) focused on the need for safety and love (corresponding to the next two levels), and Adler (see above) stressed esteem needs (at the fourth level). Maslow added self-actualisation to the peak of the hierarchy (Glassman, 1995).

According to Rogers (1951), while awareness of being alive is the most basic of human experiences, we each fundamentally live in a world of our own creation and have a unique perception of the world (the *phenomenal field*). It's our *perception* of external reality that shapes our lives (*not* external reality itself). Within our phenomenal field, the most significant element is our sense of *self*, 'an organised consistent gestalt, constantly in the process of forming and reforming' (Rogers, 1959: see Chapter 42). This view contrasts with those of many other self theorists, who see it as a central, unchanging core of personality (see Chapter 33).



Abraham H. Maslow (1908–1970)

ASK YOURSELF...

- Repeat the exercise as for the behaviourist and psychodynamic approaches.

Practical contributions

By far the most significant practical influence of any humanistic psychologist is Rogers' *client-* (or *person-*) *centred therapy* (see Chapter 45). Originally (in the 1950s) it was called 'client-centred' (CCT), but since the mid-1970s it has been known as 'person-centred' therapy (PCT):

... psychotherapy is the releasing of an already existing capacity in a potentially competent individual. (Rogers, 1959)

The change in name was meant to reflect more strongly that the person, in his/her full complexity, is the centre of focus. Also, Rogers wanted to convey that his assumptions were meant to apply broadly to almost all aspects of human behaviour – not just to therapeutic settings. For example, he saw many parallels between therapists and teachers: they're both 'facilitators' of an atmosphere of freedom and support for individual pursuits (Nye, 2000). For Nye:

At the level at which Rogers' ideas were developed originally, in therapy and counselling situations, his impact certainly has been significant and far-reaching. A wide range of individuals – psychotherapists, counsellors, social workers, clergy and others – have been influenced by Rogers' assumptions that, if one can be a careful and accurate listener, while showing acceptance and honesty, one can be of help to troubled persons.

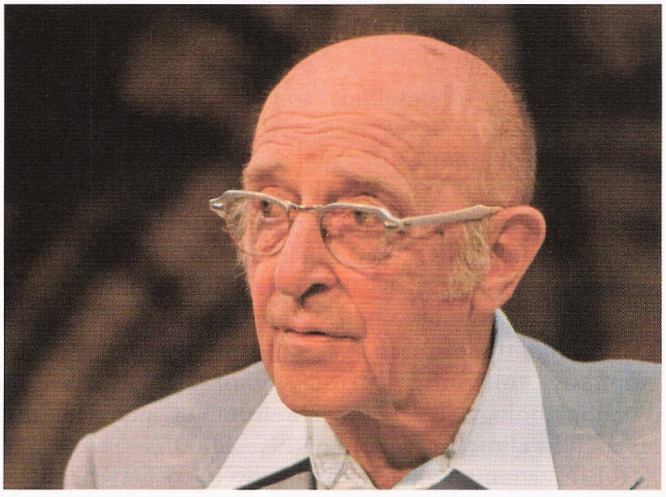
Less well known is the prolific research that Rogers undertook during the 1940s, 1950s and 1960s into this form of therapy. According to Thorne (1992):

This body of research constituted the most intensive investigation of psychotherapy attempted anywhere in the world up to that time ... The major achievement of these studies was to establish beyond all question that psychotherapy could and should be subjected to the rigours of scientific enquiry.

Rogers helped develop research designs (such as Q-sorts) which enable objective measurement of the self-concept, ideal self and their relationship over the course of therapy, as well as methodologies (such as rating scales and the use

of external 'consultants') for exploring the importance of therapist qualities. These innovations continue to influence therapeutic practice, and many therapists are now concerned that their work should be subjected to research scrutiny. Research findings are now more likely than ever before to affect training procedures and clinical practice across many different therapeutic orientations (Thorne, 1992: see Chapter 45).

By emphasising the therapist's personal qualities, Rogers opened up psychotherapy to psychologists and contributed to the development of therapy provided by non-medically qualified therapists (*lay therapy*). This is especially significant in the USA, where (until recently) psychoanalysts had to be psychiatrists (medically qualified). Rogers originally used the term 'counselling' as a strategy for silencing psychiatrists who objected to psychologists practising 'psychotherapy'. In the UK, the outcome of Rogers' campaign has been the evolution of a counselling profession whose practitioners are drawn from a wide variety of disciplines, with neither psychiatrists nor psychologists dominating. Counselling skills are used in a variety of settings throughout education, the health professions, social work, industry and commerce, the armed services, and international organisations (Thorne, 1992).



Carl Rogers (1902–1987)

An evaluation of the humanistic approach

- According to Wilson *et al.* (1996), the humanistic approach isn't an elaborate or comprehensive theory of personality, but should be seen as a set of uniquely personal theories of living created by humane people optimistic about human potential. It has wide appeal to those who seek an alternative to the more mechanistic, deterministic theories.
- However, like Freud's theory, many of its concepts are difficult to test empirically (such as self-actualisation), and it cannot account for the origins of personality. Since it describes but doesn't explain personality, it's subject to the *nominal fallacy* (Carlson & Buskist, 1997).
- Nevertheless, for all its shortcomings, the humanistic approach represents a counterbalance to the psychodynamic (especially Freud) and the behaviourist approaches, and has helped to bring the 'person' back into psychology. Crucially, it recognises that people help determine their own behaviour and aren't simply slaves to environmental contingencies or to their past. The self, personal responsibility and agency, choice, and free will are now legitimate issues for psychological investigation.

THE COGNITIVE APPROACH

Basic principles and assumptions

Despite its undoubted influence within psychology as a whole (see below and Chapter 3), it's more difficult to define the boundaries of cognitive psychology compared with the other major approaches. Its identity isn't as clearly established, and it cannot be considered to be a specific, integrated set of assumptions and concepts. It has several contemporary forms, with many theories, research programmes and forms of psychotherapy having a 'cognitive tilt' (Nye, 2000).

Also, there's no specific figure who can be identified as being central to its development in the same way as Watson, Freud and Rogers can with their respective approaches. As Wade & Tavris (1990) say:

> Cognitive psychology does not yet have a unifying theory, and unlike other 'brands' of psychology ... it lacks an acknowledged spokesperson.

Box 2.5 Some basic principles and assumptions of the cognitive approach

- According to Parkin (2000), psychologists in general, and cognitive psychologists in particular, face a problem not faced by other scientists:

  The human brain is not like other organs of the body in that looking at its structure does not reveal anything about how it functions. We can see that the wall of the small intestine acts as an absorptive surface, the heart as a pump, and the kidney as a filter. The brain, however, is a large mass of cells and fibres which, no matter how clearly we look at it, gives no indication of how we think, speak and remember ...

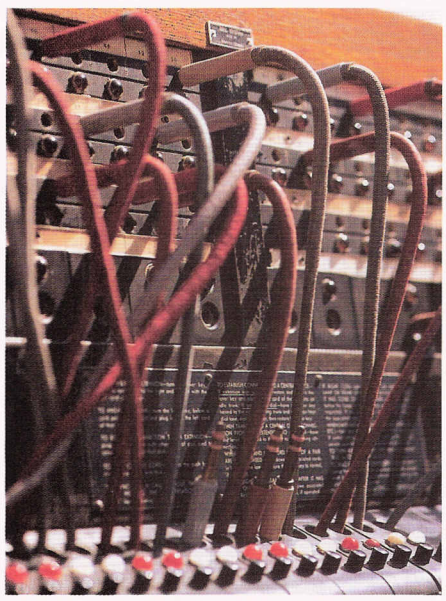
  For these reasons, cognitive psychologists are forced to seek *analogies* and *metaphors* when trying to describe a construct within the brain – that is, how the brain works is compared with the operation of something we already understand.

- Many different analogies have been used in cognitive psychology. By far the most dominant is that internal

mental abilities are *information processing systems* (drawing on ideas from telecommunications and computer science: the *computer analogy*). Included within this overall analogy are several central ideas or concepts, such as *coding*, *channel capacity*, and *serial/parallel processing* (see Chapter 20).

- Every telecommunication system uses some form of *coding*. For example, a telephone receives and translates our voice into an electromagnetic code, which is then decoded back into our voice at the other end. Cognitive psychologists realised that the concept of coding was central to understanding the representations used by the brain. When we see a picture, for example, we extract information from it that forms a code, which is, therefore, a symbol of the original stimulus (see Chapters 5 and 15).
- *Channel capacity* is the idea that any transmission system has a finite limit to the amount of information it can hold. Nowadays, with the advent of optic fibres, channel capacity can be huge – but it's still limited. This is also true of human beings: most of our mental activities are capacity-constrained, such as our attentional processes (see Chapter 13). But compared with physical communication devices, human coding is more flexible, and can take account of the form of the input in order to reduce the amount and nature of information that's actually formed into a code (as demonstrated in *span of apprehension experiments* and *chunking* (see Chapter 17). Unlike humans, physical systems reduce all information to fundamental units ('bits'), which in turn allows the absolute capacity of the system to be defined (which is impossible for human information processing).

(Based on Parkin, 2000)



The mind as an information-processing device

Theoretical contributions

We noted earlier (see page 18) that two major modifications to 'orthodox' learning theory are Tolman's *cognitive behaviourism* and *social learning theory* (associated primarily with Bandura). Both these theories stress the central role of cognitive processes in the learning process. The influence of the information-processing approach is obvious in relation to attention, pattern recognition and memory (see Box 2.6), but it has permeated many other areas of psychology. As we noted in Chapter 1, *social cognition* is now a commonly used term to refer to many aspects of the perception of people (see Chapter 22), attribution (see Chapter 23), attitudes and attitude change (including prejudice: see Chapters 24 and 25), and other areas of social psychology.

The information-processing approach also represents an increasingly influential view of cognitive development (see Chapter 34) and of the nature of intelligence (see Chapter 41). Cognitive behaviour therapy also represents a major approach to the treatment of mental disorders (see Chapter 45 and the section entitled 'Practical contributions', below).

ASK YOURSELF...

- Repeat the exercise as for the behaviourist, psychodynamic and humanistic approaches.

Practical contributions

In relation to counselling and psychotherapy, Ellis's *rational emotive behaviour therapy* (REBT: previously just called rational emotive therapy or RET) deserves special attention (Nye, 2000). According to Rorer (1998), 'the cognitive revolution in psychotherapy began with the publication of [Ellis's 1962 book] *Reason and Emotion in Psychotherapy*'. REBT is the predecessor of the current cognitive and cognitive-behaviour therapies (see Chapter 45), and continues to evolve and gain in popularity. His emphasis on the primacy of cognition in psychopathology is at the forefront of practice and research in clinical psychology (Nye, 2000).

REBT attempts directly and actively to get clients to dispute their irrational and unscientific beliefs, and replace them with rational beliefs, which are less likely to be associated with extremely negative emotional states or maladaptive behaviours. The key concept underlying REBT (and other cognitive approaches) is that people are disturbed not by events themselves but by their *perception* of them. (This is similar to Rogers' *phenomenal field*: see above.)

Although Ellis (1987) believes that people have a biological tendency to think irrationally, REBT is an optimistic approach. It emphasises that:

... people have enormous power to think about their thinking, to use rationality and the scientific method, and to radically control and change their emotional destiny – providing they really work at doing so. (Ellis, 1987)



Albert Ellis (born 1913)

An evaluation of the cognitive approach

- The parallels between human beings and computers are compelling (Parkin, 2000). According to Lachman *et al.* (1979):

> Computers take a symbolic input, recode it, make decisions about the recoded input, make new expressions from it, store some or all of the input, and give back a symbolic input. By analogy that is what most cognitive psychology is about. It is about how people take in information ... recode and remember it, how they make decisions, how they transform their internal knowledge states, and how they translate these states into behavioural outputs.

Box 2.6 Some other similarities between computers and humans as information processors

- Computers operate in terms of *information streams*, which flow between different components of the system. This is conceptually similar to how we assume symbolic information flows through human information channels (for example, see Atkinson and Shiffrin's multi-store model (MSM) of memory, Chapter 17, page 287).
- All computers have a *central processing unit*, which carries out the manipulation of information. At the simplest level, a central processor might take a sequence of numbers and combine them according to a particular rule in order to compute an average. This was seen by many as analogous to the mechanism that would be responsible for the same type of mental operation.
- Computers have *databases* and *information stores*, which are permanent representations of knowledge the computer has acquired. In many ways this is comparable to our permanent (long-term) memory.
- Information sometimes needs to be held for a period of time while some other operation is performed. This is the job of the *information buffer*, which is a feature of computers and information-processing models of human attention (see Chapter 13) and memory (again, see the section on the MSM in Chapter 17).

(Based on Parkin, 2000)

ASK YOURSELF...

- Can you think of some limitations of the computer analogy? (See Box 2.9 and Chapter 20, pages 351–353.)

- Information-processing accounts invariably address some specific aspect of mental processing, rather than being all-embracing accounts of cognition. A good example (in addition to those given in Box 2.6) is Bruce and Young's (1986) model of *face recognition* (see Chapter 14, pages 240–241). A *model* is more than a mere analogy (see Chapter 1): the proposed information-processing system is specified in sufficient detail to enable clear predictions to be made about how humans would behave in certain situations.
- Cognitive psychologists implicitly adopted, at least initially, a strong *nomothetic* view of human mental processes – that is, they assumed that any information-processing model would apply equally to everyone (see Chapter 42). But the influence of *individual differences* soon became apparent. The general rule is that the more complex the cognitive process, the more likely there are to be individual differences (Parkin, 2000).
- Until the mid-1980s, mainstream cognitive psychologists took little interest in the study of how brain damage affects subsequent cognitive and behavioural functioning. *Cognitive neuropsychologists* now study people with acquired cognitive deficits in order to learn about the nature and organisation of cognitive functioning in normal people (the *cognitive architecture* of mental processes: see Chapter 4).

THE SOCIAL CONSTRUCTIONIST APPROACH

Basic principles and assumptions

Social constructionism (SC) has played a central role in the various challenges that have been made to mainstream, academic psychology (see Chapter 3) during the last 30 years or so. The emergence of SC is usually dated from Gergen's (1973) paper 'Social psychology as history'. In this, he argued that all knowledge, including psychological knowledge, is historically and culturally specific, and that we therefore must extend our enquiries beyond the individual into social, political and economic realms for a proper understanding of the evolution of present-day psychology and social life. Since the only constant feature of social life is that it's continually *changing*, psychology in general – and social psychology in particular – becomes a form of *historical undertaking*: all we can ever do is try to understand and account for how the world appears to be *at the present time*.

Gergen's paper was written at the time of 'the crisis in social psychology'. Starting in the late 1960s and early 1970s, some social psychologists were becoming increasingly concerned that the 'voice' of ordinary people was

being omitted from social psychological research. By concentrating on *decontextualised* laboratory behaviour, it was ignoring the real-world contexts that give human action its meaning. Several books were published, each proposing an alternative to positivist science and focusing on the accounts of ordinary people (e.g. Harré and Secord, 1972). These concerns are clearly seen today in SC.

ASK YOURSELF...

- Try to formulate some arguments for and against the view that people are basically the same, regardless of culture and historical period (the *universalist assumption*).

While there's no single definition of SC that would be accepted by all those who might be included under its umbrella, we could categorise as social constructionist any approach that is based on one or more of the following key attitudes (as proposed by Gergen, 1985). Burr (2003) suggests we might think of these as 'things you would absolutely have to believe in order to be a social constructionist'.

- *A critical stance towards taken-for-granted knowledge:* our observations of the world don't reveal in any simple way the true nature of the world, and conventional knowledge isn't based on objective, unbiased 'sampling' of the world (see Table 3.1, page 42). The categories with which we understand the world don't necessarily correspond to natural or 'real' categories/distinctions. Belief in such natural categories is called *essentialism*, so social constructionists are *anti-essentialism*.
- *Historical and cultural specificity:* how we commonly understand the world, and the categories and concepts we use, are historically and culturally *relative*. Not only are they specific to particular cultures and historical periods, they're seen as products of that culture and history, and this must include the knowledge generated by the social sciences. The theories and explanations of psychology thus become time- and culture-bound, and cannot be taken as once-and-for-all descriptions of human nature:

  > The disciplines of psychology and social psychology can therefore no longer be aimed at discovering the 'true' nature of people and social life ... (Burr, 2003)

- *Knowledge is sustained by social processes:* our current accepted way of understanding the world ('truth') doesn't reflect the world as it really is (*objective reality*), but is constructed by people through their everyday interactions. Social interaction of all kinds, and particularly language, is of central importance for social constructionists: it's other people, both past and present, who are the sources of knowledge.

> We are born into a world where the conceptual frameworks and categories used by the people of our culture already exist ... Concepts and categories are acquired by each person as they develop the use of language and are thus reproduced every day by everyone who shares a culture and language. This means that the way a person thinks, the very categories and concepts that provide a framework of meaning for them, are provided by the language that they use. Language therefore is a necessary pre-condition for thought as we know it ... (Burr, 2003)

CRITICAL DISCUSSION 2.1: Transcultural and cross-cultural psychology, and the universalist assumption

- If knowledge is culturally created, then we shouldn't assume that our ways of understanding are necessarily any better (closer to 'the truth') than other ways. Yet this is precisely what mainstream (social) psychology has done. According to Much (1995), a new *(trans)cultural psychology* has emerged in North America (e.g. Bruner, 1990; Cole, 1990; Shweder, 1990) as an attempt to overcome the bias of *ethnocentrism* that has too often limited the scope of understanding in the social sciences (see Chapter 47).
- Shweder (1990) makes the crucial distinction between *cultural psychology* and *cross-cultural psychology* (C-CP), which is a branch of experimental social, cognitive and personality psychology.

  (a) Most of what's been known as 'cross-cultural' psychology has presupposed the categories and models that have been based on (mostly experimental) research with (limited samples of) Euro-American populations. It has mostly either 'tested the hypothesis' or 'validated the instrument' in other cultures or 'measured' the social and psychological characteristics of members of other cultures with the methods and standards of western populations, usually assumed as a valid universal norm.

  (b) The new 'cultural psychology' rejects this *universalist* model (Much, 1995). It's become almost a 'standing joke' that experimental (social) psychology is really the psychology of the American undergraduate/psychology major (see Chapter 47). Apart from their accessibility, the argument commonly assumed to justify the practice of studying mostly student behaviour is based upon a sweeping and gratuitous universalist assumption: since we're all human, we're all fundamentally alike in significant psychological functions, and cultural/social contexts of diversity don't affect the important 'deep' or 'hard-wired' structures of the mind. The corollary of this assumption is that the categories and standards developed on western European/North American populations are suitable for 'measuring', understanding and evaluating the characteristics of other populations.

- By contrast, a genuinely transcultural psychology – 'the interplay between the individual and society and [symbolic] culture' (Kakar, 1982, quoted in Much, 1995) – would base its categories, discriminations and generalisations upon empirical knowledge of the fullest possible range of existing human forms of life, without privileging one form as the norm or standard for evaluation.



Penitents in Mauritius, participating in a Hindi religious ceremony. The lower lip is pierced through for the insertion of a copper or brass ring, often with a view to maintain strict silence

By giving a central role to *social interactions* and seeing these as actively producing taken-for-granted knowledge of the world, it follows that language itself is more than simply a way of expressing our thoughts and feelings (as typically assumed by mainstream psychology). When people talk to each other, they (help to) *construct* the world, such that language use is a form of action (it has a '*performative*' role (see Chapter 18).

- *Knowledge and social action go together:* these 'negotiated' understandings could take a wide variety of forms, so that there are many possible 'social constructions' of the world. But each different construction also brings with it, or invites, a different kind of action: how we account for a particular behaviour (what caused it) will dictate how we react to and treat the person whose behaviour it is (see Chapter 23).

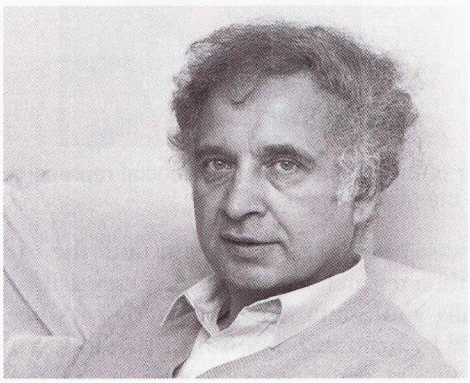
Mainstream psychology looks for explanations of social phenomena *inside* the person – for example, by hypothesising the existence of attitudes, motives, cognitions, and so on (*individualism*: see Box 47.1, page 856). This can also be seen as *reductionist* (see Chapter 49). Social constructionists reject this view: explanations are to be found neither inside the individual psyche, nor in social structures or institutions (as advocated by sociologists), but in the *interactive processes* that take place routinely between people. For Burr (2003):

Knowledge is therefore seen not as something that a person has or doesn't have, but as something that people do together ...

Theoretical contributions and an evaluation of social constructionism

Social constructionism and social representation theory

- According to *social representation theory* (SRT), people come to understand their social world by way of images and social representations (SRs) shared by members of a social group. These representations act like a map which makes a baffling or novel terrain familiar and passable, thereby providing evaluations of good and bad areas. Attitudes are secondary phenomena, underpinned by SRs. SRT tries to provide a historical account of people's understanding of the world (Potter, 1996).
- During the 1950s, the French psychologist, Moscovici, conducted one of the classic pieces of research on SRs. He was interested in how the ideas/concepts of psychoanalytic theory could be absorbed within a culture (post-Second World War France), based on women's magazines, church publications and interviews. He concluded that psychoanalytic theory had trickled down from the analytic couch and learned journals into both 'high' culture and popular common sense: people 'think' with psychoanalytic concepts, without it seeming as if they are doing anything theoretical at all. But rather than the general population of Paris being conversant with/conversing with psychoanalytic theory in all its complexities, they were working with a simplified image of it, with some concepts having a wide currency (such as repression) and others not (such as libido) (Potter, 1996).



Serge Moscovici (born 1925)

- SRT is a *constructionist* theory: instead of portraying people as simply perceiving (or misperceiving) their social worlds, it regards these worlds as constructed, and an SR is a device for doing this construction. It allows someone to make sense of something potentially unfamiliar and to evaluate it. For Moscovici, all thought and understanding are based on the working of SRs, each of which consists of a mixture of concepts, ideas and images; these are both in people's minds and circulating in society.

Box 2.7 What's social about social representations (SRs)?

According to Potter (1996), SRs are truly social for the following reasons:

- they're *generated in communication*. When people interact through gossip, argue with one another or discuss political scandals, they're building up shared pictures of the world: 'social representations are the outcome of an increasing babble and a permanent dialogue between individuals' (Moscovici, 1985). The media play a major role in sustaining, producing and circulating SRs, which cannot be reduced to images inside people's heads;
- they *provide a code for communication*. As a consequence of people sharing SRs, they can clearly understand each other and have free-flowing conversations, since they share a stable version of the world. Communication between people with different SRs is likely to produce conflict;
- they *provide a way of distinguishing social groups*. According to Moscovici, one way of defining a group is in terms of a shared set of SRs, which provide a crucial *homogenising* force for groups.


Newspaper of the Year

THE INDEPENDENT

Arts&BooksReview

£20m in 24 hours

Shocked by the devastation caused by the tsunami, Britons responded yesterday with unprecedented generosity to the appeal for donations

The power of the media to circulate social representations by capturing the 'national mood'

- SRT wasn't published in English until the early 1980s. Since then research has snowballed, especially in Europe, Australia and South America (though it's been largely ignored by mainstream North American social psychologists in the experimental cognitive tradition). Potter (1996) suggests that one reason for this may be that the latter's pursuit of general laws and processes is directly challenged by SRT's emphasis on the specific content of a culture's or group's SR as the main object of analysis.

Social constructionism and feminist psychology

- For Stainton Rogers *et al.* (1995),

> ... there is no conceptual vacuum we can occupy where we can be 'outside' the pressing 'social facts' that constitute our understanding of the world. All we can ever do is ... begin to recognise the illusions which constitute our 'social realities' as illusions and not as really real realities.

- Feminist scholars are concerned with trying to identify and challenge those illusory aspects of our social realities that specifically relate to women. According to Nicolson (1995), they've been consistently developing critiques of *positivist science* (see Chapter 3) for the past 100 years, with momentum and influence gathering especially since the early 1970s.
- Part of this feminist critique involves demonstrating how positivist science, far from being value-free, displays a clear bias towards the 'pathologisation' of women (see Chapters 36, 43, 44 and 47). Nicolson (1995) argues that the scientific method is gender-biased (see Chapters 3 and 47), claiming that the priority western society attaches to science is more problematic today than ever before, because of the relationship of science to the media, which influences human socialisation (cf. the role of the media in circulating SRs: see above). She argues that:

> Psychology relies for its data on the practices of socialised and culture-bound individuals, so that to explore 'natural' or 'culture-free' behaviour (namely that behaviour unfettered by cultural, social structures and power relations) is by definition impossible, which is a state of affairs that normally goes unacknowledged ...

'Normally' denotes *mainstream psychology*. SC, in its various forms, is concerned with acknowledging this 'state of affairs'. The view that 'science as knowledge is fabricated rather than discovered' (Fox, 1993) is gaining popularity among feminist psychologists.

- Although within feminism itself there are many different 'voices', feminism is essentially a reaction to and a product of *patriarchal* culture (or *patriarchy*), and one of its significant roles has been to account for women's subordination. Patriarchy commonly refers to the context and processes through which men and male-dominated institutions (including universities and other organisations that foster scientific endeavour) promote male supremacy. Feminist psychologists seek to *contextualise* women's lives and to explain the constraints, attributed by some to biology, within a social framework: women's lack of social power is made to seem 'natural' by the practice of academic psychology. They also offer a critical challenge to psychological knowledge on gender issues by drawing on other disciplines (such as sociology and anthropology). This rarely occurs in psychology, because, traditionally, it is 'jealous' of its boundaries (Nicolson, 1995).

THE EVOLUTIONARY APPROACH

Basic principles and assumptions

Sociobiology (Wilson, 1975) grew out of the work of evolutionary biologists in the 1960s. Wilson set out to explain all non-human and human social behaviour in terms of

evolution and other biological principles. It concentrated on the evolutionary origins of behaviour and tended to imply rigid genetic control (Archer, 1996). Since then, many of these principles have been used to study topics covered by the social sciences – including psychology.

Evolutionary psychology (Buss, 1995) is a development of sociobiology (and is often referred to as '*neo-* or *modern Darwinism*'). According to evolutionary psychology (EP), evolutionary principles are used to link the original *function* of behaviour to current psychological mechanisms, and *flexibility of responding* is central to those mechanisms. Starting with the principle of natural selection, evolutionary psychologists construct a theory of human nature – that is, an overall view of how we should expect humans to behave. From this, they derive and test more specific theories and hypotheses (Archer, 1996).

According to Rose (2000):

> The declared aim of evolutionary psychology is to provide explanations for the patterns of human activity and the forms of organisation of human society which take into account the fact that humans are animals, and like all other currently living organisms, are the present-day products of some four billion years of evolution ...

Box 2.8 Some basic principles and assumptions of evolutionary psychology (EP)

- EP rejects the Standard Social Science Model (SSSM), which makes two broad assumptions about human beings: (a) there's no such thing as human nature, or if there is, it has so little effect on people's social lives that it can be ignored; (b) explanations of social behaviour can be derived from considering only social roles, socialisation and culture.
- Human social behaviour, like that of non-humans, can be understood in terms of its past contribution to survival and reproduction. For example, instead of regarding young males' proneness to violence in terms of social learning (modelling) or frustration (Berkowitz, 1993), EP views it as the result of its past contributions to obtaining resources, status and access to women (Daly and Wilson, 1988a, 1988b: see Chapter 29).
- While acknowledging their debt to sociobiology, evolutionary psychologists contend that sociobiologists often ignored the role of *mind* in mediating links between genes and behaviour. According to Barkow, Cosmides and Tooby (1992), the mind consists of a collection of specialised, independent mechanisms or *modules*, designed by natural selection to solve problems that faced our hunter-gatherer ancestors, such as acquiring a mate, raising children and dealing with rivals. The solutions often involve such emotions as lust, fear, affection, jealousy and anger. Together, these modules and the related emotions constitute *human nature*.
- EP is, in general, about *universal* features of the mind. In so far as individual differences exist, the default assumption is that they're expressions of the same universal human nature as it encounters different environments. *Gender* is the crucial exception to this rule. Natural selection has constructed the mental modules of men and women in very different ways as a result of their divergent reproductive roles (*sexual dimorphism*).
- EP *isn't* a form of *genetic determinism* (or *nativism*). Like most modern biologists and social scientists, evolutionary psychologists argue that 'nature or nurture' is a false dichotomy, and they distinguish themselves from behaviour geneticists (see Chapter 50).

(Based on Horgan, 1995; Rose, 2000)

Theoretical contributions

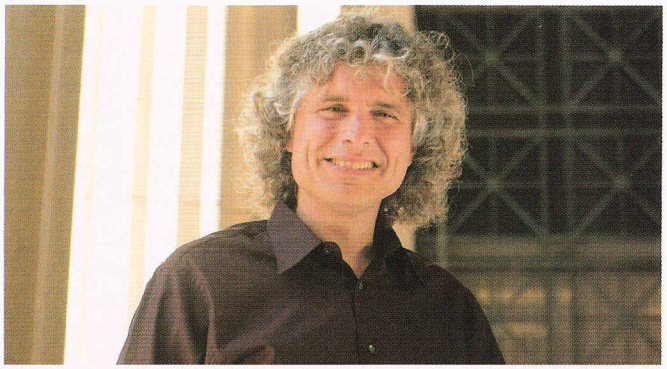
As indicated in Box 2.8, EP (and sociobiological) explanations can be found throughout psychology. For example, fear is commonly regarded as an adaptive response to threatening stimuli and events, while anxiety is an 'aberration' (see Chapter 44). Similarly, the harmful effects of stress have been explained in evolutionary terms. While the body's stress response evolved to help us cope with life-threatening situations (emergencies), most 'modern-day' stressors aren't like this. Consequently, our bodies react in an inappropriate, and potentially life-threatening, way to 'chronic' stress (see Chapter 12).

Rather more controversially, Buss (1994) claims that men, because they can in principle father a virtually infinite number of children, are much more inclined towards promiscuity than women are. Women, because they can average only one child per year, are choosier in selecting a mate. Men in all cultures place greater emphasis on youth and physical attractiveness, while women look to men's 'resources' (see Chapter 28). Similarly, because men can never be sure that a child is theirs, their jealousy tends to be triggered by fears of a mate's sexual infidelity. Women, on the other hand, become more upset at the thought of losing a mate's emotional commitment – and thus his resources. In turn, women make greater 'parental investment' in their children than men do (see Chapter 32).

Perhaps the best-known, and also one of the most controversial, claims of sociobiology is Dawkins' (1976) 'selfish-gene' theory (see Chapter 30).

Is language an instinct?

According to Pinker (1994), a linguist 'converted' to EP, language is far too complex to be learned: it must stem from an innate 'program' hardwired into our brains. Language almost certainly arose, he claims, because it was adaptive – that is, it conferred benefits on our hunter-gatherer ancestors. It would have allowed early hominids to share learned tool-making, hunting and other skills, and those especially adept at language could manipulate others and form alliances that would increase their chances of producing offspring.



Steven Pinker (born 1954)

Ironically, these claims are *denied* by Chomsky, a fellow linguist and colleague of Pinker's. Chomsky first argued in the 1950s that language represents a distinct mental module (or 'language organ') unique to human beings and independent of general cognitive ability, and that we all possess an innate Language Acquisition Device (LAD: see Chapter 19). In this way, he laid the foundation for EP, and evolutionary psychologists are, in a sense, his heirs (Horgan, 1995; Kohn, 1998).

However, Chomsky disputes the assumption that language is a 'selected trait': just because language is adaptive now, doesn't mean that it *arose* in response to selection pressures. Given the enormous gap between human language and the relatively simple communication systems of other species, and given our fragmentary knowledge of our evolutionary past, science can tell us little about how language evolved. It may have been an incidental/accidental by-product of a spurt in intelligence or of the human brain's large size (Horgan, 1995; Kohn, 1998). The same may be true of other properties of the human mind.

ASK YOURSELF...

- Repeat the exercise as for the other approaches.
- Look at the arguments you formulated for and against the universalist assumption (in relation to social constructionism). Are any of these relevant in evaluating EP?

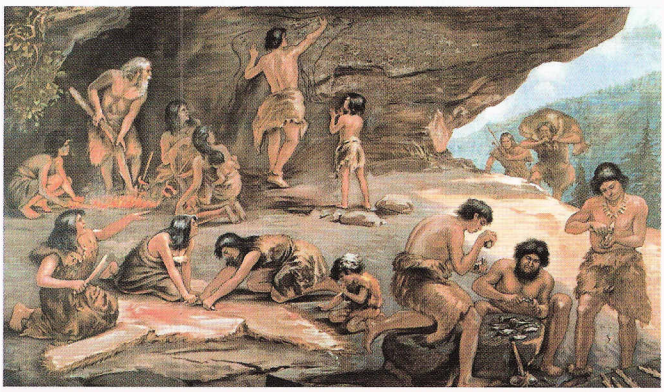
An evaluation of EP

Our hunter-gatherer past

- EP is based on the belief that the human mind is adapted to cope with life as a Pleistocene hunter-gatherer (which we were for about two million years before the ancient Chinese, Indian, Egyptian and Sumerian civilisations: Abdulla, 1996). Forms of behaviour and social organisation that evolved adaptively over many generations in human hunter-gatherer society may or may not be adaptive in modern industrialised society; but they have become, to a degree, fixed by humanity's evolutionary experience in the Palaeolithic *Environment of Evolutionary Adaptation* (EEA), thought to be the African savannah (Rose, 2000).
- However, just as Chomsky's argument with Pinker concerned *how* language evolved (rather than whether or not it evolved), so the story of our human hunter-gatherer ancestors is, inevitably, partly a work of fiction (Turney, 1999). According to Rose (2000), the descriptions offered by EP of what hunter-gatherer societies were like read little better than 'Just so' accounts:

> There is a circularity about reading this version of the present into the past, and then claiming that this imagined past explains the present.

In other words, based on what human beings are capable of *now*, evolutionary psychologists imagine how these abilities may have evolved, then propose this *constructed past* as the cause of these current abilities.



Can we use 'images' like these of our hunter-gatherer ancestors to explain how our current human abilities evolved?

- Evolutionary psychologists also claim that the timescale of human history has been too short for evolutionary selection pressures to have produced significant change; but we know very little about just how quickly such change can occur (Rose, 2000). Evolutionarily, modern humans appeared 100,000 years ago. Allowing 15–20 years for each generation, there have been 5000–6600 generations between human origins and modern times. We really have no idea whether these generations are 'time enough' for substantial evolutionary change:

> However, granted the very rapid changes in human environment, social organisation, technology, and mode of production that have clearly occurred over that period, one must assume significant selection pressures operating ... the automatic assumption that the Palaeolithic was an EEA in which fundamental human traits were fixed, and that there has not been time since to alter them, does not bear serious inspection. (Rose, 2000)

Box 2.9 EP, computers and emotion

- Drawing heavily on the jargon and conceptual framework of computer science and artificial intelligence (see Chapter 20), evolutionary psychologists see the mind as

a *cognitive machine*, an information-processing device that is 'run' by the brain. It's *not* a general-purpose computer, but is composed of several specific modules (see Box 2.8). For Rose (2000), however:

... it is not adequate to reduce the mind/brain to nothing more than a cognitive 'architectural' information-processing machine. Brains/minds do not just deal with information. They are concerned with living meaning ... the key feature which distinguishes brains/minds from computers is their/our capacity to experience emotion. Indeed, emotion is primary – which may be why Darwin devoted an entire book to it rather than to cognition. (Rose, 2000)

- Several neuroscientists have devoted considerable attention to the mechanisms and survival advantages of emotion (e.g. LeDoux, 1998: see Chapter 44). This makes it all the more surprising that evolutionary psychologists give so much emphasis to cognitive functions. For Rose:

... affect and cognition are inextricably engaged in all brain and mind processes, creating meaning out of information – just one more reason why brains aren't computers.

- Most remarkable of all is the phrase used by Cosmides, Tooby and others, namely the 'architecture of the mind', implying a static, stable structure, built to a blueprint. Nothing could be less appropriate for capturing the fluid, dynamic process whereby our minds/brains develop, creating 'order out of the blooming buzzing confusion of the world which confronts us moment by moment'. (Rose, 2000)

Phylogeny and ontogeny

- According to Karmiloff-Smith (2000), developmental psychologists see *plasticity* during brain growth as the rule rather than the exception or a response to brain injury (see Chapter 4). Cosmides & Tooby (1994) compare the newborn brain to a Swiss army knife, crammed with independent functional tools, each designed for a specific problem that faced our hunter-gatherer ancestors (see Box 2.8).
- But even if we set aside the problem of knowing just what the problems faced by our ancestors were (and, therefore, what tools they needed), Karmiloff-Smith believes that it's just as plausible that, unlike the gross macro-structure of the brain, cortical micro-circuitry *isn't* innately specified by evolution but is progressively constructed by the postnatal experience of different kinds of input. She argues that:

Evolution has helped to guarantee human survival by raising the upper limits on complexity and avoiding too much prespecification of higher cognitive functions ...

Development requires both evolution (*phylogeny*) and *ontogeny* (individual development):

A multitude of different learning mechanisms which may have emerged from evolution might, during ontogeny, each discover inputs from the environment that are more or less suited to their form of processing. Gradually, with development and with trying to process different kinds of input, each mechanism would become progressively more domain-specific.

Hence:

Evolutionary psychology's Swiss army knife view of the brain is inappropriate for understanding higher cognitive functions, particularly for children ... (Karmiloff-Smith, 2000)

Violent stepfathers and the problem of unfalsifiability

- According to Daly & Wilson (1988a, 1988b), children under the age of two were at least 60 times more likely to be killed by a step-parent – and almost always a stepfather – than by a natural parent. This is exactly what evolutionary theory would predict, since step-parents and step-children are genetically unrelated, while a child inherits half its genes from each biological parent.
- However, most stepfathers *don't* kill or abuse, and a minority of biological fathers do; these findings are difficult to square with any explanation based on shared/non-shared genes.
- More seriously, in discussing women who kill their newborn babies, Pinker (1997b) claimed that when such an act takes place in conditions of poverty, it could be regarded as an *adaptationist* response. The psychological module that normally induces protectiveness in mothers of newborns is switched off by the challenge of an impoverished environment. This means that both killing and protecting are explained by evolutionary selection. As Hilary Rose (2000) says, this explains everything and, therefore, nothing.

CONCLUSIONS

The focus of this discussion of various theoretical approaches within psychology has been on how each conceptualises human beings. Freud's 'tension-reducing person', Skinner's 'environmentally controlled person' and Rogers' 'growth-motivated person' really are quite different from each other (Nye, 2000). The person-as-information-processor and the person-as-shaped-by-our-evolutionary-past are different again – both from each other and from the first three approaches. SC's image of the person is rather less concrete and more elusive: what people are like and what they do is *relative* to their culture, historical period, and so on.

However, we've also noted some important similarities between different approaches, such as the deterministic nature of Freud's and Skinner's theories, and the influence of the information-processing approach on EP. As

we shall see throughout this book, each approach has something of value to contribute to our understanding of ourselves – even if it is only to reject the particular explanation it offers. The diversity of approaches reflects the complexity of the subject matter, so, usually, there's room for a diversity of explanations.

CHAPTER SUMMARY

- Different theoretical **approaches/perspectives** are based on different models/images of the nature of human beings.
- **Methodological behaviourism** focuses on what can be quantified and observed by different researchers. Skinner's **radical behaviourism** regards mental processes as both **inaccessible** and **irrelevant** for explaining behaviour.
- The **behaviourist approach** stresses the role of environmental influences (**learning**), especially **classical** and **operant conditioning**. Psychology's aim is to **predict** and **control** behaviour.
- Tolman's **cognitive behaviourism** and **social learning theory** represent modifications of 'orthodox' learning (conditioning) theory.
- Methodological behaviourism has influenced the practice of scientific psychology in general. Other practical contributions include **behaviour therapy** and **modification**, **behavioural neuroscience** and **pharmacology**, and **biofeedback**.
- The **psychodynamic approach** is based on Freud's **psychoanalytic theory**. Central aspects are the **unconscious** (especially **repression**), **infantile sexuality**, and the impact of **early experience**.
- Freud's ideas have become part of **mainstream psychology**, contributing to our understanding of motivation, sleep and dreams, forgetting, attachment, aggression and abnormality.
- Major modifications/alternatives to Freudian theory include **ego psychology**, Erikson's **psychosocial theory**, and the **object relations school**.
- All forms of **psychotherapy** stem directly or indirectly from **psychoanalysis**. Many trained psychoanalysts have been responsible for developing radically different therapeutic approaches, including Rogers, Perls and Wolpe.
- Maslow called the **humanistic approach** the 'third force' in psychology. It believes in free will, adopts a **phenomenological perspective**, and stresses the **positive** aspects of human personality.
- Rogers was a prolific researcher into the effectiveness of his **client/person-centred therapy**, opened up psychotherapy to psychologists and other non-medically qualified practitioners, and created a counselling profession that operates within a wide diversity of settings.
- The **cognitive approach** lacks both a central figure and a unifying theory. It uses **analogies** and **metaphors** when trying to describe what's going on inside the brain, in particular the **computer analogy** and the view of people as **information processors**.
- Other important features of the cognitive approach include the concepts of **coding**, **channel capacity** and **serial/parallel processing**.
- A major application of the cognitive approach has been **cognitive behaviour therapy**, as in Ellis's **rational emotive behaviour therapy** (REBT).
- While the computer analogy is a useful way of understanding cognitive processes, there are also some important **differences** between how computers and people process information.
- One of the goals of **social constructionism** (SC) is to correct the tendency of mainstream psychology to **decontextualise** behaviour. Related to this is the **universalist assumption**, which is challenged by **(trans)cultural** (as distinct from **cross-cultural**) **psychology**.
- **Social representation theory** (SRT) is a social constructionist theory, and many **feminist psychologists** adopt a social constructionist approach in challenging mainstream psychology.
- **Evolutionary psychology** (EP) grew out of **sociobiology**. Unlike the latter, EP puts the **mind** in centre stage, identifying several independent mental mechanisms or **modules**. These form the core of **human nature**.
- A major assumption of EP is that these mental modules have become fixed by our hunter-gatherer ancestors' experience in the Palaeolithic **Environment of Evolutionary Evolution** (EEA). But knowledge of the EEA is largely speculative, and there's good reason to believe that human traits have changed since that time.
- The notion of the 'architecture of the mind' is contradicted by the dynamic nature of brain activity and development, which requires both evolution (**phylogeny**) and individual development (**ontogeny**).

Links with other topics/chapters

- The description of classical and operant conditioning as forms of associative learning reflects the philosophical roots of behaviourism, namely the *empiricist* philosophy of John Locke. This was a major influence on the development of science in general, as well as on behaviourism in particular (Chapter 3).
- Defining the aims of a science of behaviour as prediction and control raises both *conceptual* questions (about the *nature of science*, in particular the role of theory: Chapter 3) and *ethical* questions (for example, about

power and the role of *psychologists as agents of change*: Chapter 48).

- The *ethics* of some forms of *behaviour modification* (such as the token economy) and certain aspects of *applied behaviour analysis* (especially the use of punishment with vulnerable individuals) have been seriously questioned (Chapters 45 and 48).
- Many psychologists would agree that there are degrees or levels of *consciousness*, but most wouldn't share Freud's distinction between the conscious, preconscious and unconscious mind (Chapter 7).
- The distinction between cultural psychology and cross-cultural psychology corresponds to the *emic–etic distinction* (Chapter 47).
- Social constructionism is consistent with Whorf's *linguistic relativity hypothesis* and the more general theory of *linguistic determinism* (language determines thought) (Chapter 18).
- Discursive psychology (a social constructionist approach) finds nothing odd about the common finding that *attitudes are often poor predictors of behaviour* (see Critical Discussion 24.1, page 411).
- Social representations are an important part of *social cognition* and *social perception* (Chapter 22, pages 379–381).

Some philosophical roots of science and psychology

Empiricism and psychology

Wundt's contribution

James's contribution

Watson's behaviourist revolution

The cognitive revolution

Science, scientism and mainstream psychology

What do we mean by 'science'?

The major features of science

What is 'scientific method'?

Can psychology be a science if psychologists cannot agree what psychology is?

Is a theoretical approach the same as a paradigm?

The scientific study of human behaviour

The social nature of science: the problem of objectivity

The psychology experiment as a social situation

Experimenters are people too: the problem of experimenter bias

Participants are psychologists too: demand characteristics

The problem of representativeness

The problem of artificiality

The problem of internal versus external validity

Conclusions

Chapter summary

Links with other topics/chapters

3

PSYCHOLOGY AS A SCIENCE



INTRODUCTION AND OVERVIEW

As we saw in Chapter 1, psychology is commonly defined as the scientific study of behaviour and cognitive processes (or mind or experience). In effect, this book as a whole looks at how different psychologists have put this definition into practice, through their use of various investigative methods to study a wide variety of behaviours and cognitive processes.

This chapter turns the spotlight once more on the definition of psychology given above. It does this by examining the nature of science (including the major features of scientific method), and by tracing some of the major developments in psychology's history as a scientific discipline. This enables us to address the question of how appropriate it is to use scientific method to study human behaviour and cognitive processes, and to assess the validity of this widely accepted definition.

SOME PHILOSOPHICAL ROOTS OF SCIENCE AND PSYCHOLOGY

The seventeenth-century French philosopher Descartes was the first person to distinguish formally between mind and matter (*philosophical dualism*: see Chapter 49), which had an enormous impact on the development of both psychology as a science and science in general. Dualism allowed scientists to treat matter as inert and completely distinct from human beings, which meant that the world could be described *objectively*, without reference to the human observer. *Objectivity* became the ideal of science, and was extended to the study of human behaviour and social institutions in the mid-1800s by Comte, who called it *positivism*.

Descartes also promoted *mechanism*, the view that the material world comprises objects which are assembled like a huge machine and operated by mechanical laws. He extended this view to living organisms, including, eventually, humans. Because the mind (unlike the physical world) is non-material, Descartes believed that it can be investigated only through *introspection* (observing one's own thoughts and feelings: see Chapter 1, page 4). He was also one of the first advocates of *reductionism* (see Chapter 49).



René Descartes (1596–1650)

Empiricism refers to the ideas of the seventeenth- and eighteenth-century British philosophers, Locke, Hume and Berkeley. They believed that the only source of true knowledge about the world is sensory experience (what comes to us through our senses or can be inferred about the relationship between such sensory facts). Empiricism is usually contrasted with *nativism* (or *rationalism*), according to which knowledge of the world is largely innate or inborn.

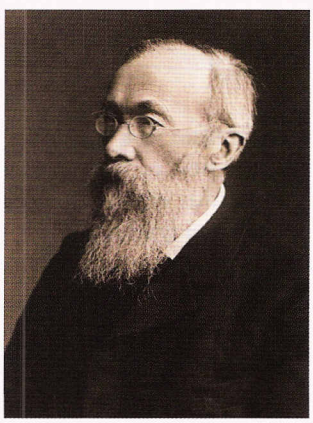
The word '*empirical*' ('through the senses') is often used to mean 'scientific', implying that what scientists do, and what distinguishes them from non-scientists, is carry out experiments and observations as ways of collecting data or 'facts' about the world (hence, 'empirical methods' for 'scientific methods'). Empiricism proved to be one of the central influences on the development of physics and chemistry.

Empiricism and psychology

Prior to the 1870s, there were no laboratories devoted specifically to psychological research, and the early scientific psychologists had trained mainly as physiologists, doctors, philosophers, or some combination of these. The two professors who set up the first two psychological laboratories deserve much of the credit for the development of academic psychology. They were Wundt (1832–1920) in Germany, and James (1842–1910) in the USA (Fancher, 1979).

Wundt's contribution

A physiologist by training, Wundt is generally regarded as the 'founder' of the new science of experimental psychology, or what he called 'a new domain of science' (1874). Having worked as Helmholtz's assistant (see Chapter 15), Wundt eventually became professor of 'scientific philosophy' at Leipzig University in 1875, illustrating the lack of distinct boundaries between the various disciplines that combined to bring about psychology's development (Fancher, 1979).



Wilhelm Wundt (1832–1920)

In 1879, Wundt converted his 'laboratory' at Leipzig into a 'private institute' of experimental psychology. For the first time, a place had been set aside for the explicit

purpose of conducting psychological research, and hence 1879 is widely accepted as the 'birth date' of psychology as a discipline in its own right. From its modest beginnings, the institute began to attract people from all over the world, who returned to their own countries to establish laboratories modelled on Wundt's.

Box 3.1 Wundt's study of the conscious mind: introspective psychology and structuralism

- Wundt believed that conscious mental states could be scientifically studied through the systematic manipulation of *antecedent variables* (those that occur before some other event), and analysed by carefully controlled techniques of *introspection*.
- Introspection was a rigorous and highly disciplined technique for analysing conscious experience into its most basic elements (*sensations* and *feelings*). Participants were always advanced psychology students, who'd been carefully trained to introspect properly.
- Sensations are the raw sensory content of consciousness, devoid of all 'meaning' or interpretation, and all conscious thoughts, ideas and perceptions were assumed to be combinations of sensations. Based on his experiment in which he listened to a metronome beating at varying rates, Wundt concluded that feelings could be analysed in terms of *pleasantness–unpleasantness*, *tension–relaxation* and *activity–passivity*.
- Wundt believed that introspection made it possible to cut through the learned categories and concepts that define our everyday experience of the world, and so expose the 'building blocks' of experience.
- Because of introspection's central role, Wundt's early brand of psychology was called *introspective psychology* (or *introspectionism*), and his attempt to analyse consciousness into its elementary sensations and feelings is known as *structuralism*.

(Based on Fancher, 1979)

ASK YOURSELF...

- Consider the difficulties that might be involved in relying on introspection to formulate an account of the nature of conscious experience (i.e. an account that applies to *people in general*).
- In what ways is structuralism *reductionist*? (See Chapter 49.)
- Which major theory of perception rejects this structuralist approach, and what are its principal features? (See Chapter 15.)

James's contribution

James taught anatomy and physiology at Harvard University in 1872, and by 1875 was calling his course 'The Relations Between Physiology and Psychology'. In the same year, he established a small laboratory, used mainly for teaching purposes. In 1878, he dropped anatomy and physiology, and for several years taught 'pure psychology'.

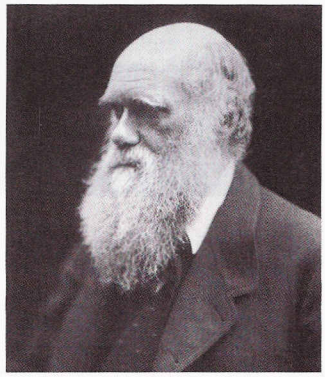
His view of psychology is summarised in *The Principles of Psychology* (1890), which includes discussion of instinct, brain function, habit, the stream of consciousness, the self (see Chapter 33), attention (Chapter 13), memory (Chapter 17), perception (Chapters 15 and 16), free will (Chapter 49), and emotion (Chapter 10).



William James (1842–1910)

The Principles of Psychology provided the famous definition of psychology as 'the science of mental life' (see Chapter 1). But ironically, James was very critical both of his book and of what psychology could offer as a science. He became increasingly interested in philosophy and lost interest in psychology, although in 1894 he became the first American to call favourable attention to the recent work of the then little known Viennese neurologist, Sigmund Freud (Fancher, 1979).

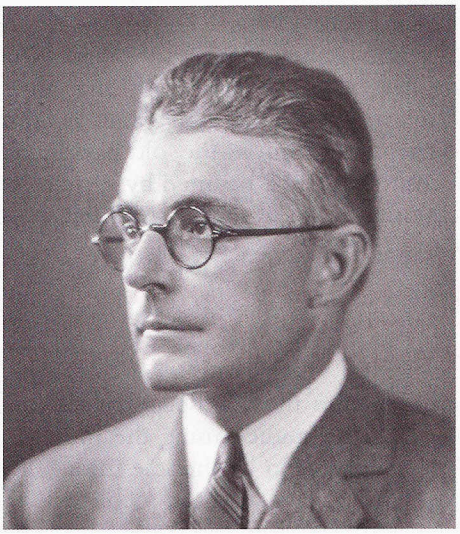
James proposed a point of view (rather than a theory) that directly inspired *functionalism*, which emphasises the purpose and utility of behaviour (Fancher, 1979). Functionalism, in turn, helped to stimulate interest in *individual differences*, since they determine how well or poorly individuals adapt to their environments. These attitudes made Americans especially receptive to Darwin's (1859) ideas about individual variation, evolution by natural selection, and the 'survival of the fittest' (see Chapter 2).



Charles Darwin (1809–1882)

Watson's behaviourist revolution

Watson took over the psychology department at Johns Hopkins University in 1909, and immediately began cutting psychology's ties with philosophy and strengthening those with biology. At that time, Wundt's and James's studies of consciousness were still the 'real' psychology, but Watson was doing research on non-human animals and became increasingly critical of the use of introspection.



John Broadus Watson (1878–1958)

In particular, Watson argued that introspective reports were unreliable and difficult to verify. It's impossible to check the accuracy of such reports, because they're based on purely *private experience*, to which the investigator has no possible means of access. As a result, Watson redefined psychology in his famous 'behaviourist manifesto' of 1913.

Box 3.2 Watson's (1913) 'behaviourist manifesto'

- Watson's article 'Psychology as the behaviourist views it' is often referred to as the 'behaviourist manifesto', a charter for a truly scientific psychology. It was behaviourism that was to represent a rigorous empiricist approach within psychology for the first time. According to Watson:

  psychology as the behaviourist views it is a purely objective natural science. Its theoretical goal is the prediction and control of behaviour. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviourist ... recognises no dividing line between man and brute. The behaviour of a man ... forms only a part of the behaviourist's total scheme of investigation.

- Three features of this 'manifesto' deserve special mention:

  1. Psychology must be purely *objective*, excluding all subjective data or interpretations in terms of conscious experience. This redefines psychology as the '*science of behaviour*' (rather than the 'science of mental life').
  2. The goals of psychology should be to *predict* and *control* behaviour (as opposed to describing and explaining conscious mental states), a goal later endorsed by Skinner's *radical behaviourism* (see Chapter 2).
  3. There's no fundamental (*qualitative*) distinction between human and non-human behaviour. If, as Darwin had shown, humans evolved from more simple species, then it follows that human behaviour is simply a more complex form of the behaviour of other species (the difference is merely *quantitative* – one of degree). Consequently, rats, cats, dogs and pigeons became the major source of psychological data. Since 'psychological' now meant 'behaviour' rather than 'consciousness', non-humans that were convenient to study, and whose environments could be easily controlled, could replace people as experimental subjects.

(Based on Fancher, 1979; Watson, 1913)

ASK YOURSELF...

- Try to formulate arguments for and against Watson's claim that there's only a quantitative difference between the behaviour of humans and non-humans.

In his 1915 presidential address to the American Psychological Association, Watson talked about his recent 'discovery' of Pavlov's work on conditioned reflexes in dogs. He proposed that the conditioned reflex could become the foundation for a full-scale human psychology.

The extreme environmentalism of Locke's empiricism (see above) lent itself well to the behaviourist emphasis on learning (through the process of Pavlovian or classical conditioning). While Locke had described the mind at birth as a *tabula rasa* ('blank slate') on which experience writes, Watson, in rejecting the mind as suitable for a scientific psychology, simply swapped mind for *behaviour*: it's now behaviour that's shaped by the environment.

According to Miller (1962), empiricism provided psychology with both (a) a *methodology* (stressing the role of observation and measurement) and (b) a *theory*, including *analysis into elements* (such as stimulus–response units) and *associationism* (which explains how simple elements can be combined to form more complex ones).

Behaviourism also embodied positivism, in particular the emphasis on the need for scientific rigour and objectivity. Humans were now conceptualised and studied as 'natural phenomena', with subjective experience, consciousness, and other characteristics (traditionally regarded as distinctive human qualities) no longer having a place in the behaviourist world.

The cognitive revolution

Academic psychology in the USA and the UK was dominated by behaviourism for the next 40 years. However, criticism and dissatisfaction with it culminated in a number of 'events', all taking place in 1956, which, collectively, are referred to as the 'cognitive revolution'.

Box 3.3 The 1956 'cognitive revolution'

- At a meeting at the Massachusetts Institute of Technology (MIT), Chomsky introduced his theory of language (see Chapter 19), Miller presented a paper on the 'magical number seven' in short-term memory (see Chapter 17), and Newell and Simon presented a paper on the logical theory machine (or logic theorist), with a further paper by Newell *et al.* (1958), which Newell and Simon (1972) extended into the general problem-solver (GPS: see Chapter 20).
- The first systematic attempt to investigate concept formation (in adults) from a cognitive psychological perspective was reported (Bruner *et al.*, 1956).
- At Dartmouth College, New Hampshire (the 'Dartmouth Conference'), ten academics met to discuss the possibility of producing computer programs that could 'behave' or 'think' intelligently. These academics included McCarthy (generally attributed with having coined the term 'artificial intelligence'), Minsky, Simon, Newell, Chomsky and Miller (see Chapter 20).

(Based on Eysenck and Keane, 1995)



George A. Miller (born 1920)

This new way of thinking about and investigating people was called the *information-processing approach*. At its centre is the *computer analogy*, the view that human cognition can be understood by comparing it with the functioning of a digital computer. It was now acceptable to study the mind again, although its conceptualisation was very different from that of Wundt, James and the other pioneers of the 'new psychology' prior to Watson's 'behaviourist revolution'.

Science, scientism and mainstream psychology

Despite this major change in psychology after 1956, certain central assumptions and practices within the discipline have remained essentially the same, and these are referred to as *mainstream psychology*. Harré (1989) refers to the mainstream as the 'old paradigm', which he believes continues to be haunted by certain 'unexamined presuppositions'. One of these is *scientism*, defined by Van Langenhove (1995) as:

> ... the borrowing of methods and a characteristic vocabulary from the natural sciences in order to discover causal mechanisms that explain psychological phenomena.

Scientism maintains that all aspects of human behaviour can and should be studied using the methods of natural science, which claims to be the sole means of establishing 'objective truth'. This can be achieved by studying phenomena removed from any particular context ('*context-stripping*' exposes them in their 'pure' form), and in a *value-free* way (there's no bias on the investigator's part). The most reliable way of doing this is through the laboratory experiment, the method providing the greatest degree of control over relevant variables (see Box 3.7, page 47). As noted earlier, these beliefs and assumptions add up to the traditional view of science known as positivism.

ASK YOURSELF...

- Try to find examples of experimental studies of human behaviour that fit the definition of 'context-stripping' given above. Probably the 'best' examples will come from social psychology, which in itself should suggest criticisms of this approach to studying behaviour. (See also Chapter 47.)

Although much research has moved beyond the confines of the laboratory experiment, the same positivist logic is still central to how psychological enquiry is conceived and conducted. Method and measurement still have a privileged status:

> Whether concerned with mind or behaviour (and whether conducted inside or outside the laboratory), research tends to be constructed in terms of the separation (or reduction) of entities into independent and dependent variables and the measurement of hypothesised relationships between them. (Smith *et al.*, 1995)

Despite the fact that since the mid-1970s the natural sciences model has become the subject of vigorous attacks, psychology is still to a large extent dominated by it. The most prominent effect of this is the dominance of experiments (Van Langenhove, 1995). This has far-reaching effects on the way psychology *pictures* people as more or less passive and mechanical information-processing devices, whose behaviour can be split up into variables. It also affects the way psychology *deals* with people. In experiments, people aren't treated as single individuals, but as interchangeable 'subjects'. There's no room for individualised observations.

WHAT DO WE MEAN BY 'SCIENCE'?

The major features of science

Most psychologists and philosophers of science would probably agree that for a discipline to be called a science, it must possess certain characteristics. These are summarised in Box 3.4 and Figure 3.1.

Box 3.4 The major features of science

- **A definable subject matter.** This changed from conscious human thought to human and non-human behaviour, then to cognitive processes, within psychology's first 80 years as a separate discipline.
- **Theory construction.** This represents an attempt to *explain* observed phenomena, such as Watson's attempt to account for (almost all) human and non-human behaviour in terms of classical conditioning, and Skinner's subsequent attempt to do the same with operant conditioning (see Chapters 2 and 11).
- **Hypothesis testing.** This involves making specific *predictions* about behaviour under certain conditions (for example, predicting that by combining the sight of a rat with the sound of a hammer crashing down on a steel bar just behind his head, a small child will learn to fear the rat, as in the case of Little Albert: see Key Study 11.1, page 174).
- **Empirical methods.** These are used to collect *data* (*evidence*) relevant to the hypothesis being tested.

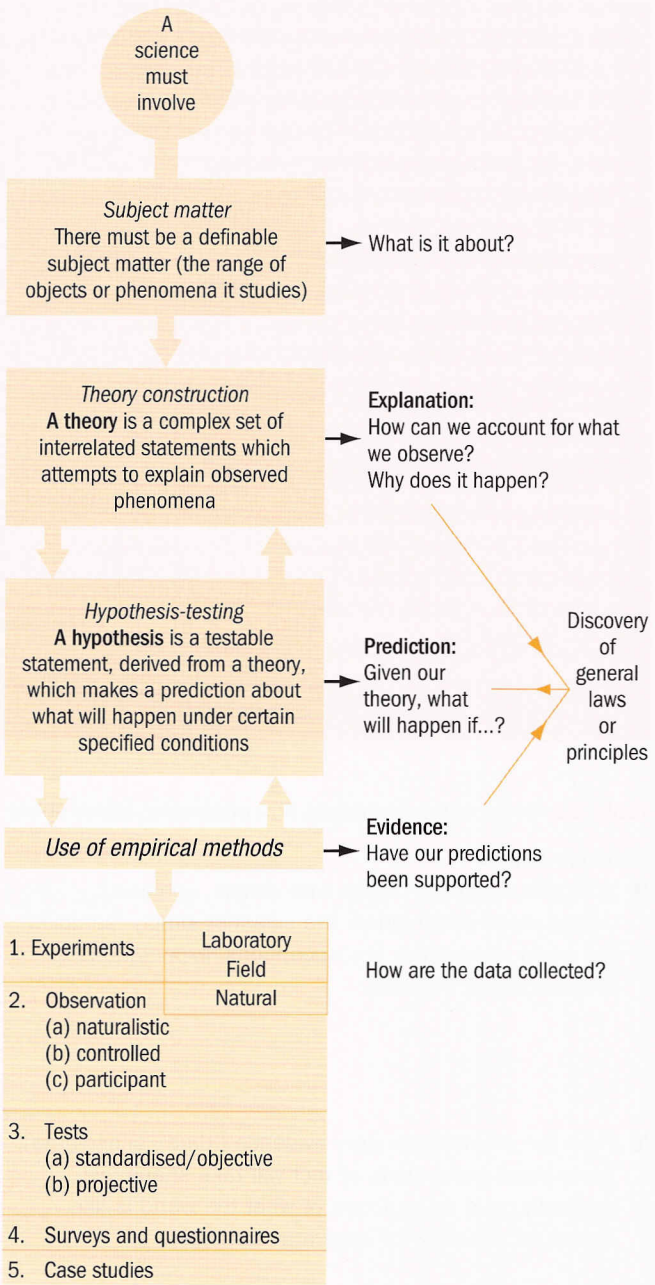


Figure 3.1 A summary of the major features of a science

What is 'scientific method'?

The account given in Box 3.4 and Figure 3.1 of what constitutes a science is non-controversial. However, it fails to tell us how the *scientific process* takes place, the sequence of 'events' involved (such as where the theory comes from in the first place, and how it's related to observation of the subject matter), or the exact relationship between theory construction, hypothesis testing, and data collection.

Collectively, these 'events' and relationships are referred to as (the) *scientific method*. Table 3.1 summarises some common beliefs about both science and scientific method, together with some alternative views.

Box 3.5 The inner world of scientists

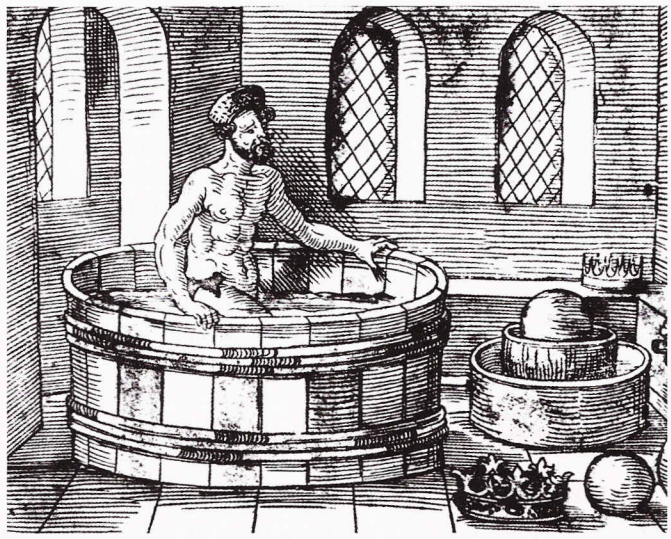
- According to Richards and Wolpert (1997), scientists, outside their own habitat, are a poorly understood species. If they feature in popular awareness at all, it's through a limited set of media stereotypes. With a few exceptions, if scientists aren't mad or bad, they're perceived as personality-free, their measured tones and formal reports implying ways of thinking and working far removed from the intellectual and emotional 'messiness' of other human activities.

- Richards and Wolpert engaged in a series of conversations with several eminent scientists (including chemists, immunologists, biologists, biochemists, neuro- and evolutionary biologists) in an attempt to redress the balance, and give a rare glimpse of the human reality of scientific life.
- Scientists think and feel about their work using the same psychological apparatus as the rest of us. The human qualities of science come over very strongly: its energy and imaginative richness, the frustration, love and despair that enslave its practitioners.
- For example, Mitchison (an immunologist) says that experiments start with 'the act of creation':

  Not all experiments you think of are good experiments, but thinking of one is just wonderful, eureka! It's fantastic.

- According to Edelman (an immunologist and neurobiologist), stumbling upon the solution to a problem when you least expect to find it is a 'remarkable pleasure'. Some scientists are like voyeurs, with 'almost a lustful feeling of excitement when a secret of nature is revealed'.

(Adapted from Richards and Wolpert, 1997)



The original 'Eureka' ('I have found it') moment – Archimedes (287–212 BC) discovering the principle of buoyancy

Table 3.1 Some common beliefs and alternative views about 'science' and 'scientific method'

Common beliefs	Alternative views
● Scientific discovery begins with simple, unbiased, unprejudiced observation: the scientist simply 'samples' the world without any preconceptions, expectations or predetermined theories.	● There's no such thing as 'unbiased' or 'unprejudiced' observation. Observation is always selective, interpretative, prestructured, and directed: we must have at least some idea of what we're looking for, otherwise we cannot know when we've found it. Goldberg (2000) cites a philosophy professor who asserted that what we call 'data' (that which is given) should more accurately be called 'capta' (that which is taken).
■ From the resulting sensory evidence ('data'/sense-data), generalised statements of fact will take shape: we gradually build up a picture of what the world is like based on a number of separate 'samples'.	■ 'Data' don't constitute 'facts': evidence usually implies measurements, numbers, and recordings, which need to be interpreted in the light of a theory. Facts don't exist objectively and cannot be discovered through 'pure observation'. 'Fact' = Data + Theory (Deese, 1972).
▲ The essential feature of scientific activity is the use of empirical methods, through which the sensory evidence is gathered: what distinguishes science from non-science is performing experiments etc.	▲ Despite the central role of data collection, data alone don't make a science. Theory is just as crucial, because without it data have no meaning (see point above).
▼ The truth about the world (the objective nature of things, what the world is 'really like') can be established through properly controlled experiments and other ways of collecting 'facts': science can tell us about reality as it is *independently* of the scientist or the activity of observing it.	▼ Scientific theory and research reflect the biases, prejudices, values and assumptions of the individual scientist, as well as of the scientific community s/he belongs to. Science *isn't* value-free (see Chapter 47).
◆ Science involves the steady accumulation of knowledge: each generation of scientists adds to the discoveries of previous generations.	◆ Science involves an endless succession of long, peaceful periods ('normal science') and 'scientific revolutions' (Kuhn, 1962: see Table 3.3, page 43).
	❇ Science has a warm, human, exciting, argumentative, creative 'face' (Collins, 1994: see Box 3.5).

(Based on Medawar, 1963; Popper, 1972)

Table 3.2 Comparison between the classical, inductive view of science and Popper's revised version

Inductive method	Popper's version
Observation and method	Problem (usually a refutation of an existing theory or prediction)
Inductive generalisation	Proposed solution or new theory
Hypothesis	Deduction of testable statements (hypotheses) from the new theory. This relates to the *hypothetico-deductive method*, which is usually contrasted with/opposed to the inductive method. In practice, both approaches are involved in the scientific process and are complementary
Attempted verification of hypothesis	Tests or attempts to refute by methods including observation and experiment
Proof or disproof	Establishing a preference between competing theories
Knowledge	

(Based on Popper, 1972)

As a result of the first two beliefs identified in Table 3.1, Popper (1972) has revised the stages of the scientific process as proposed by the classical view (the *inductive method*). This, together with Popper's revised version, is shown in Table 3.2.

Can psychology be a science if psychologists cannot agree what psychology is?

As we noted earlier, definitions of psychology have changed during its lifetime, largely reflecting the influence and contributions of its major theoretical approaches or orientations. In this chapter (and Chapter 2) we've seen that each approach rests upon a different image of what people are like. This, in turn, determines what's considered worthy of investigation, as well as the methods of study that can and should be used to investigate it. Consequently, different approaches can be seen as self-contained disciplines, as well as different facets of the same discipline (Kline, 1988; Kuhn, 1962).

ASK YOURSELF...

- What is the underlying image of the person associated with each of the major theoretical approaches within psychology?
- Which of these do you consider captures your own experience, and your experience of others, most accurately, and why? (You might find it helpful to refer to both Chapters 2 and 45.)

Kuhn argues that a field of study can only legitimately be considered a science if a majority of its workers subscribe to a common, global perspective or *paradigm*. According to Kuhn, this means that psychology is *preparadigmatic*: it lacks a paradigm, without which it's still in a state (or stage) of *prescience*. Whether psychology has, or has ever had, a paradigm, is hotly debated.

Is a theoretical approach the same as a paradigm?

As Table 3.3 shows, Kuhn (a philosopher of science), along with some psychologists, maintains that psychology is still a prescience. Others believe that psychology has already undergone at least two revolutions, and is in a stage of normal science, with cognitive psychology the current paradigm. A third view, which represents a blend of the first two, is that psychology currently, and simultaneously, has a number of paradigms.

For example, Smith *et al.* (1998) identify psychoanalysis, behaviourism, sociobiology, and the information-processing, and cognitive–developmental approaches as paradigms, with the last being the most important as far as child development is concerned (see Chapters 34 and 35).

Table 3.3 Stages in the development of a science (▲) and their application to psychology (■)

▲ *Prescience:* No paradigm has evolved, and there are several schools of thought or theoretical orientations.

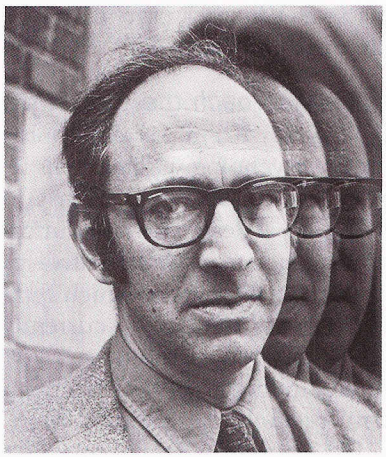
■ Like Kuhn, Joynson (1980) and Boden (1980) argue that psychology is preparadigmatic. Kline (1988) sees its various approaches as involving different paradigms.

▲ *Normal science:* A paradigm has emerged, dictating the kind of research that's carried out and providing a framework for interpreting results. The details of the theory are filled in, and workers explore its limits. Disagreements can usually be resolved within the limits allowed by the paradigm.

■ According to Valentine (1982), *behaviourism* comes as close as anything could to a paradigm. It provides: (a) a clear definition of the subject matter (behaviour as opposed to 'the mind'); (b) fundamental assumptions, in the form of the central role of learning (especially conditioning), and the analysis of behaviour into stimulus–response units, which allow prediction and control; (c) a methodology, with the controlled experiment at its core.

▲ *Revolution:* A point is reached in most established sciences where the conflicting evidence becomes so overwhelming that the old paradigm has to be abandoned and is replaced by a new one (*paradigm shift*). For example, Newtonian physics was replaced by Einstein's theory of relativity. When this paradigm shift occurs, there's a return to *normal science*.

■ Palermo (1971) and LeFrancois (1983) argue that psychology has already undergone several paradigm shifts. The first paradigm was *structuralism*, represented by Wundt's introspectionism. This was replaced by Watson's *behaviourism*. Finally, *cognitive psychology* largely replaced behaviourism, based on the computer analogy and the concept of information processing. Glassman (1995) disagrees, claiming that there's never been a complete reorganisation of the discipline, as has happened in physics.



Thomas Kuhn (1922–1996)

For Davison *et al.* (2004) the current paradigms in psychopathology and therapy are the biological, psychoanalytic, humanistic and existential, learning (behaviourist) and cognitive (see Chapter 45).

Lambie (1991) believes it's a mistake to equate 'paradigm' with 'approach'. As noted in Table 3.2, while theory is an essential part of a paradigm, there's much more involved than this. For example, different theories can co-exist within the same overall approach, such as classical and operant conditioning within 'learning theory' (the behaviourist approach), and Freud's and Erikson's theories within the psychodynamic approach.

One of the 'ingredients' that makes a paradigm different from an approach is its *social psychological* dimension. Paradigms refer to assumptions and beliefs held in common by most, if not all, the members of a given scientific community. This issue is discussed further in the following section.

THE SCIENTIFIC STUDY OF HUMAN BEHAVIOUR

The social nature of science: the problem of objectivity

'Doing science' is part of human behaviour. When psychologists study what people do, they're engaging in some of the very same behaviours they're trying to understand (such as thinking, perceiving, problem-solving and explaining). This is what's meant by the statement that psychologists are part of their own subject matter, which makes it even more difficult for them to be objective than other scientists.

According to Richards (1996b):

> Whereas in orthodox sciences there is always some external object of enquiry – rocks, electrons, DNA, chemicals – existing essentially unchanging in the non-human world (even if never finally knowable 'as it really is' beyond human conceptions), this is not so for psychology. 'Doing psychology' is the human activity of studying human activity; it is human psychology examining itself – and what it produces by way of new theories, ideas and beliefs about itself is also part of our psychology!

Knowable 'as it really is' refers to objectivity, and Richards is claiming that it may be impossible for any scientist to achieve complete objectivity. One reason for this relates to the social nature of scientific activity. As Rose (1997) says:

> How biologists – or any scientists – perceive the world is not the result of simply holding a true reflecting mirror up to nature: it is shaped by the history of our subject, by dominant social expectations and by the patterns of research funding.

Does this mean that 'the truth' only exists 'by agreement'? Does science not tell us about what things are 'really' like, but only what scientists happen to believe is the truth at any particular time?

ASK YOURSELF...

- Given what was said earlier about the sometimes very intense feelings aroused in individual scientists during the course of their work (see Box 3.5), in what ways do you think science can be described as a social activity? (It might be useful to think about why you do practical work/labs – other than because you have to!)

According to Richardson (1991), whatever the *logical* aspects of scientific method may be (deriving hypotheses from theories, the importance of refutability, and so on), science is a very *social* business. Research must be qualified and quantified to enable others to replicate it, and in this way the procedures, instruments and measures become standardised, so that scientists anywhere in the world can check the truth of reported observations and findings. This implies the need for universally agreed conventions for reporting these observations and findings (Richardson, 1991).

Collins (1994) takes a more extreme view, arguing that the results of experiments are more ambiguous than is usually assumed, while theory is more flexible than most people imagine:

> This means that science can progress only within communities that can reach consensus about what counts as plausible. Plausibility is a matter of social context so science is a 'social construct'. (Collins, 1994)

Kuhn's concept of a paradigm also stresses the role of agreement or consensus among scientists working within a particular discipline. Accordingly, 'truth' has more to do with the popularity and widespread acceptance of a particular framework within the scientific community than with its 'truth value'. The fact that revolutions do occur (paradigm shifts: see Table 3.3) demonstrates that 'the truth' can and does change.



Science is essentially a social process

For example, the change from Newtonian to Einsteinian physics reflected the changing popularity of these two accounts. For Planck (in Kuhn, 1970), who helped to shape the 'Einsteinian revolution':

> A new scientific theory does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.

The popularity or acceptability of a theory, however, must be at least partly determined by how well it explains and predicts the phenomena in question. In other words, *both* social and 'purely' scientific or rational criteria are relevant.

However, even if there are widely accepted ways of 'doing science', 'good science' doesn't necessarily mean 'good psychology'. Is it valid to study human behaviour and experience as part of the natural world, or is a different kind of approach needed altogether? After all, it isn't just psychologists who observe, experiment and theorise (Heather, 1976).

The psychology experiment as a social situation

To regard empirical research in general, and the experiment in particular, as objective involves two related assumptions:

1. researchers only influence the participants' behaviour (the outcome of the experiment) to the extent that they decide what hypothesis to test, how the variables are to be operationalised, what design to use, and so on;
2. the only factors influencing the participants' performance are the objectively defined variables manipulated by the experimenter.

ASK YOURSELF...

- Try to formulate some arguments against these two assumptions.
- What do the experimenter and participant bring with them to the experimental situation that isn't directly related to the experiment, and how may this (and other factors) influence what goes on in the experimental situation? (See Chapter 47.)

Experimenters are people too: the problem of experimenter bias

According to Rosenthal (1966), what the experimenter is *like* is correlated with what s/he *does*, as well as influencing the participant's perception of, and response to, the experimenter. This is related to *experimenter bias*.

Box 3.6 Some examples of experimenter bias

- According to Valentine (1992), experimenter bias has been demonstrated in a variety of experiments, including reaction time, psychophysics, animal learning, verbal conditioning, personality assessment, person perception, learning and ability, as well as in everyday life situations.
- What these experiments consistently show is that if one group of experimenters has one hypothesis about what it expects to find and another group has the opposite hypothesis, *both* groups will obtain results that support their respective hypotheses. The results *aren't* due to the mishandling of data by biased experimenters, but the experimenter's bias somehow creates a changed environment, in which participants actually behave differently.
- When experimenters were informed that rats learning mazes had been specially bred for this ability ('maze-bright'), they obtained better learning from their rats than did experimenters who believed their rats were 'maze-dull' (Rosenthal & Fode, 1963; Rosenthal & Lawson, 1964). In fact, both groups of rats were drawn from the same population and were *randomly* allocated to the 'bright' or 'dull' condition. The crucial point is that the 'bright' rats did actually learn faster. The experimenters' expectations in some way concretely changed the situation, although how this happened is far less clear.
- In a natural classroom situation, children whose teachers were told they'd show academic 'promise' during the next academic year showed significantly greater IQ gains than children for whom such predictions weren't made (although this latter group also made substantial improvements). In fact, the children were *randomly* allocated to the two conditions. But the teachers' expectations actually produced the predicted improvements in the 'academic promise' group – that is, there was a *self-fulfilling prophecy* (Rosenthal & Jacobson, 1968).

(Based on Valentine, 1992; Weisstein, 1993)

ASK YOURSELF...

- How could you explain the findings from the studies described in Box 3.6?
- How could experimenter expectations actually bring about the different performances of the two groups of rats and children?

Participants are psychologists too: demand characteristics

Instead of seeing the person being studied as a passive responder to whom things are done ('subject'), Orne (1962) stresses what the person *does*, implying a far more *active* role. Participants' performance in an experiment could be thought of as a form of *problem-solving behaviour*. At some level, they see the task as working out the true purpose of the experiment and responding in a way which will support (or not support, in the case of the unhelpful participant) the hypothesis being tested.

In this context, the cues that convey the experimental hypothesis to participants represent important influences on their behaviour, and the sum total of those cues are called the *demand characteristics* of the experimental situation. These cues include:

> ... the rumours or campus scuttlebutt [gossip] about the research, the information conveyed during the original situation, the person of the experimenter, and the setting of the laboratory, as well as all explicit and implicit communications during the experiment proper. (Orne, 1962)

This tendency to identify the demand characteristics is related to the tendency to play the role of a 'good' (or 'bad') experimental participant.

KEY STUDY 3.1 The lengths that some people will go to to please the experimenter (Orne, 1962)

- Orne points out that if people are asked to do five push-ups as a favour, they'll ask 'Why?', but if the request comes from an experimenter, they'll ask 'Where?'
- Similarly, he reports an experiment in which people were asked to add sheets of random numbers, then tear them up into at least 32 pieces. Five and a half hours later, they were still doing it, and the experimenter had to tell them to stop!
- This demonstrates very clearly the strong tendency of people to want to please the experimenter, and not to 'upset the experiment'. It's mainly in this sense that Orne sees the experiment as a social situation, in which the people involved play different but complementary roles. In order for this interaction to proceed fairly smoothly, each must have some idea of what the other expects of him or her.

The expectations referred to in Key Study 3.1 are part of the culturally shared understandings of what science in general, and psychology in particular, involves and



What we only do for the sake of science

without which the experiment couldn't 'happen' (Moghaddam *et al.*, 1993). So, not only is the experiment a social situation, but science itself is a *culture-related phenomenon*. This represents another respect in which science cannot claim complete objectivity.

The problem of representativeness

Traditional, mainstream experimental psychology adopts a *nomothetic* ('law-like') approach. This involves generalisation from limited samples of participants to 'people in general', as part of the attempt to establish general 'laws' or principles of behaviour (see Figure 3.1 and Chapter 42).

ASK YOURSELF...

- The photograph below captures a fairly typical scene as far as participant characteristics in mainstream psychological research are concerned.
- In this photograph of one of Asch's famous conformity experiments (see Chapter 26, page 444), what are the most apparent characteristics of the experimental participants, and how are they similar to/different from those of Asch (who's pictured furthest right)?



Despite the fact that Asch's experiments were carried out in the early 1950s, very little has changed as far as participant samples are concerned. In American psychology, at least, the typical participant is a psychology undergraduate, who's obliged to take part in a certain number of studies as a course requirement, and who receives 'course credits' for so doing (Krupat and Garonzik, 1994).

Mainstream British and American psychology has implicitly equated 'human being' with 'member of western culture'. Despite the fact that the vast majority of research participants are members of western societies, the resulting findings and theories have been applied to 'human beings', as if culture made no difference (they are 'culture-bound and culture-blind': Sinha, 1997). This *Anglocentric* or *Eurocentric bias* (a form of *ethnocentrism*) is matched by the *androcentric* or *masculinist bias* (a form of *sexism*), according to which the behaviours and experiences of men are taken as the standard against which women are judged (see Chapter 47).

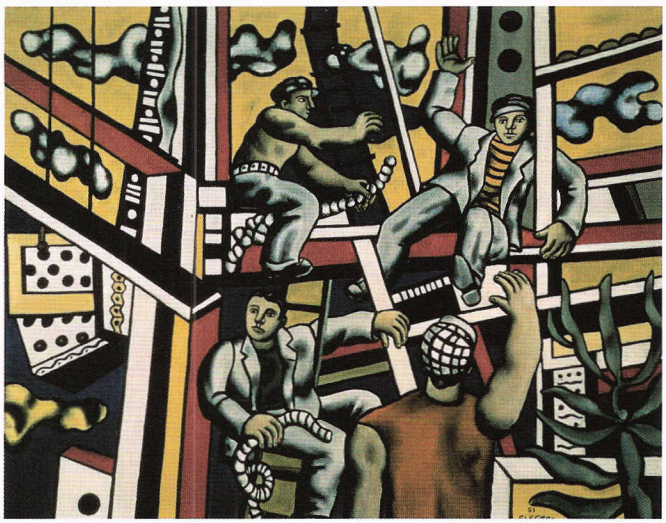
In both cases, while the bias remains implicit and goes unrecognised (and is reinforced by psychology's claim to be objective and value-free), research findings are taken as providing us with an objective, scientifically valid, account of what 'women/people in general are like'. Once we realise that scientists, like all human beings, have prejudices, biases and values, their research and theories begin to look less objective, reliable and valid than they did before.

The problem of artificiality

Criticisms of traditional empirical methods (especially the laboratory experiment) have focused on their *artificiality*, including the often unusual and bizarre tasks that people are asked to perform in the name of science (see Key Study 3.1). Yet we cannot be sure that the way people behave in the laboratory is an accurate indication of how they're likely to behave outside it (Heather, 1976).

What makes the laboratory experiment such an unnatural and artificial situation is the fact that it's almost totally structured by one 'participant' – the experimenter. This relates to *power differences* between experimenters and their 'subjects', which is as much an *ethical* as a practical issue (see Chapter 48).

Traditionally, participants have been referred to as 'subjects', implying something less than a person, a dehumanised and depersonalised 'object'. According to Heather (1976), it's a small step from reducing the person to a mere thing or object (or experimental 'subject'), to seeing people as machines or machine-like ('mechanism' = 'machine-ism' = mechanistic view of people). This way of thinking about people is reflected in the popular definition of psychology as the study of 'what makes people tick' (see Chapter 1).



The term 'subject' reduces a person to something less than human: 'man as machine'

The problem of internal versus external validity

If the experimental setting (and task) is seen as similar or relevant enough to everyday situations to allow us to generalise the results, we say that the study has high *external* or *ecological validity*. But what about *internal validity*? Modelling itself on natural science, psychology attempts to overcome the problem of the complexity of human behaviour by using experimental control. This involves isolating an independent variable (IV) and ensuring that extraneous variables (variables other than the IV likely to affect the dependent variable) don't affect the outcome (see Coolican, 1999). But this begs the crucial question 'How do we know when all the relevant extraneous variables have been controlled?'

Box 3.7 Some difficulties with the notion of experimental control

- While it's relatively easy to control the more obvious *situational variables*, this is more difficult with *participant variables* (such as age, gender and culture), either for practical reasons (such as the availability of these groups), or because it isn't always obvious exactly what the relevant variables are. Ultimately, it's down to the experimenter's judgement and intuition: what s/he believes is important (and possible) to control (Deese, 1972).
- If judgement and intuition are involved, then control and objectivity are matters of degree, whether in psychology or physics (see Table 3.1).
- It's the *variability/heterogeneity* of human beings that makes them so much more difficult to study than, say, chemicals. Chemists don't usually have to worry about how two samples of a particular chemical might be different from each other, but psychologists need to allow for *individual differences* between participants.

- We cannot just assume that the IV (or 'stimulus' or 'input') is identical for every participant, definable in some objective way, independent of the participant, and exerting a standard effect on everyone. The attempt to define IVs (and DVs) in this way can be regarded as a form of *reductionism* (see Chapter 49).
- Complete control would mean that the IV alone was responsible for the DV, so that experimenter bias and the effect of demand characteristics were irrelevant. But even if complete control were possible (in other words, if we could guarantee the *internal validity* of the experiment), a fundamental dilemma would remain. The greater the degree of control over the experimental situation, the more different it becomes from real-life situations (the more artificial it gets and the lower its *external validity*).

As Box 3.7 indicates, in order to discover the relationships between variables (necessary for understanding human behaviour in natural, real-life situations), psychologists must 'bring' the behaviour into a specially created environment (the laboratory), where the relevant variables can be controlled in a way that's impossible in naturally occurring settings. However, in doing so, psychologists have constructed an artificial environment and the resulting behaviour is similarly artificial. It's no longer the behaviour they were trying to understand!

CONCLUSIONS

Psychology as a separate field of study grew out of several other disciplines, both scientific (such as physiology), and non-scientific (in particular philosophy). For much of its life as an independent discipline, and through what some call revolutions and paradigm shifts, it has taken the natural sciences as its model (scientism). This chapter has highlighted some of the major implications of adopting methods of investigating the natural world and applying them to the study of human behaviour and experience. In doing this, the chapter has also examined what are fast becoming outdated and inaccurate views about the nature of science. Ultimately, whatever a particular science may claim to have discovered about the phenomena it studies, scientific activity remains just one more aspect of human behaviour.

CHAPTER SUMMARY

- **Philosophical dualism** enabled scientists to describe the world **objectively**, which became the ideal of science. Its extension by Comte to the study of human behaviour and social institutions is called **positivism**.
- Descartes extended **mechanism** to the human body, but the mind remained accessible only through **introspection**.
- **Empiricism** emphasises the importance of sensory experience, as opposed to **nativism's** claim that knowledge is innate. 'Empirical' implies that the essence of science is collecting data/facts through experiments and observations.
- Wundt is generally regarded as the founder of the new science of experimental psychology. He used **introspection** to study conscious experience, analysing it into its basic elements (**structuralism**).
- James is the other pioneer of scientific psychology. As well as helping to make Freud's ideas popular in America, he influenced **functionalism** which, in turn, stimulated interest in **individual differences**.
- Watson argued that for psychology to be objective, it must study **behaviour** rather than mental life, its goals should be **prediction** and **control**, and there are only **quantitative differences** between human and animal behaviour.
- Dissatisfaction with behaviourism culminated in the 1956 '**cognitive revolution**'. At the centre of this new **information-processing approach** lay the **computer analogy**.
- **Scientism** maintains that all aspects of human behaviour can and should be studied using the methods of natural science. It involves '**context-stripping**' and the **value-free**, objective use of **laboratory experiments** in particular.
- A science must possess a **definable subject matter**, involve **theory construction** and **hypothesis testing**, and use **empirical methods** for **data collection**. However, these characteristics fail to describe the **scientific process** or **scientific method**.
- While the **classical view** of science is built around the **inductive method**, Popper's revised view stresses the **hypothetico-deductive method**. The two methods are complementary.
- Different **theoretical approaches** can be seen as self-contained disciplines, making psychology **pre-paradigmatic** and so still in a stage of **prescience**.
- Only when a discipline possesses a **paradigm** has it reached the stage of **normal science**, after which **paradigm shifts** result in **revolution** (and a return to normal science).
- Science is a very **social** activity. Consensus among the scientific community is paramount, as shown by the fact that revolutions involve redefining 'the truth'.
- Environmental changes are somehow produced by experimenters' expectations (**experimenter bias**), and **demand characteristics** influence participants' behaviours by helping to convey the experimental hypothesis. The experiment is a social situation and science itself is **culture-related**.
- The **artificiality** of laboratory experiments is largely due to their being totally structured by experimenters. Also, the higher an experiment's **internal validity**, the lower its **external validity** becomes.

Links with other topics/chapters

- Empiricism and nativism lie at the heart of the *nature–nurture debate* (or the *heredity and environment issue*). Sometimes, this concerns the causes of universal abilities or behaviours, such as *perception* (Chapter 16), *language* (Chapter 19), *aggression* (Chapter 29), *attachment* (Chapter 32) and *development of gender* (Chapter 36). Most controversially, the debate focuses on *individual differences*, in particular *intelligence* (Chapter 41) and *mental disorders*, such as schizophrenia and depression (Chapter 44). Chapter 50 is devoted to the debate as a whole.
- *Feminist psychologists* are highly critical of the scientific method in general and context-stripping (and the related *individualism*) in particular. They also argue that *sexism* and *androcentrism* (together with *ethnocentrism*) demonstrate how psychology is far from being objective and value-free (Chapter 47).
- The treatment of people as 'subjects' in psychology experiments has both methodological and *ethical* implications (Chapter 48). Treating subjects as interchangeable (group data are all-important) represents a *nomothetic approach* to studying people (Chapter 42).
- Rose (1997) calls experimental control *reductionism as methodology* (Chapter 49).

TWO

THE BIOLOGICAL BASIS OF BEHAVIOUR AND EXPERIENCE

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Biopsychology and other disciplines

An overview of the human nervous system (NS): structure and function

Neurons

Communication between neurons

The central nervous system (CNS)

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Clinical/anatomical methods

Invasive methods

Non-invasive methods

How does the brain develop?

The major structures and functions of the brain

The forebrain

The cerebral hemispheres (or cerebrum)

The thalamus ('deep chamber')

The hypothalamus ('under the thalamus')

The midbrain

The hindbrain

Cerebellum ('little brain')

The pons ('bridge')

The medulla oblongata ('rather long marrow')

The spinal cord

The localisation and lateralisation of brain function

Lateralisation, language and handedness

The effects of brain damage: is it 'where' or 'how much' that matters?

Split-brain patients

One brain or two? One mind or two?

The autonomic nervous system (ANS)

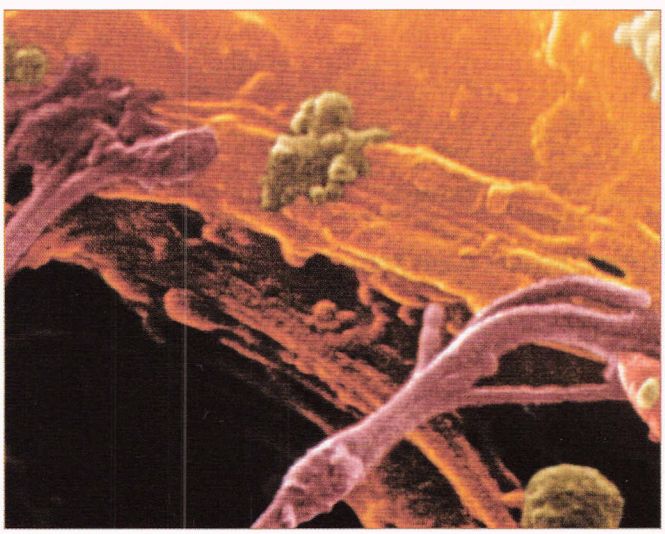
The endocrine system

Chapter summary

Links with other topics/chapters

4

THE NERVOUS SYSTEM



INTRODUCTION AND OVERVIEW

Biopsychology is the study of the biological bases, or the physiological correlates, of behaviour and is a branch of neuroscience (or the 'brain sciences'), the study of the nervous system. Biopsychology is also sometimes referred to as 'psychobiology', 'behavioural neuroscience' and 'physiological psychology'. But Pinel (1993) prefers the term 'biopsychology', because it denotes a biological approach to the study of psychology, where psychology 'commands centre stage'. According to Pinel:

> biopsychology's unique contribution to neuroscientific research is a knowledge of behaviour and of the methods of behavioural research ... the ultimate purpose of the nervous system is to produce and control behaviour.

In other words, biopsychologists aren't interested in biology for its own sake, but for what it can tell them about behaviour and mental processes. In general terms:

- the kind of behaviour an animal is capable of depends very much on the kind of body it possesses; for example, humans can flap their arms as much as they like but they'll never fly (unaided) – arms are simply not designed for flying, while wings are; however, we're very skilled at manipulating objects (especially small ones), because that's how our hands and fingers have developed during the course of evolution
- the possession of a specialised body is of very little use unless the nervous system is able to control it; of course, evolution of the one usually mirrors evolution of the other
- the kind of nervous system also determines the extent and nature of the learning a species is capable of. As you move along the phylogenetic (evolutionary) scale, from simple, one-celled amoebae, through insects, birds and mammals, to primates (including Homo sapiens), the nervous system gradually becomes more complex. At the same time, behaviour becomes increasingly the product of learning and environmental influence, rather than instinct and other innate, genetically determined factors.

BIOPSYCHOLOGY AND OTHER DISCIPLINES

According to Pinel (1993), biopsychology draws together knowledge from the other neuroscientific disciplines, in particular:

- *neuroanatomy* – the study of the structure of the nervous system (NS)
- *developmental neurobiology* – the study of how the NS changes as the organism matures and ages
- *neurochemistry* – the study of the chemical bases of neural activity, especially those underlying the transmission of signals through and between neurons (nerve cells)
- *neuroendocrinology* – the study of the interactions between the NS and the endocrine (hormonal) system (see pages 73–75);
- *neuropathology* – the study of NS disorders; related to this is *neuropsychology*, the study of the behavioural deficits produced in people by brain damage
- *neuropharmacology* – the study of the effects of drugs on the NS, especially those influencing neural transmission; related to this is *psychopharmacology*, which is concerned with the effects of drugs on behaviour (see pages 57–59 and Chapter 8)
- *neurophysiology* – the study of the responses of the NS, particularly those involved in transmission of electrical signals through and between neurons; this is related to (a) *physiological psychology*, which involves manipulation of the NS through surgical, electrical and chemical means under strictly controlled experimental conditions (*invasive methods*, using mainly non-human animal subjects), and (b) *psychophysiology*, which uses *non-invasive methods*, mainly with human participants, to study the physiology of psychological processes such as attention, emotion, information processing and, increasingly, major mental disorders (especially schizophrenia: see Chapter 44).

AN OVERVIEW OF THE HUMAN NERVOUS SYSTEM (NS): STRUCTURE AND FUNCTION

As Figure 4.1 (page 55) shows, the NS involves a number of sub-divisions. Before looking at these in detail, we need to look at some of the general characteristics of the NS.

Neurons

The NS as a whole comprises approximately 100 billion (100,000,000,000) nerve cells or *neurons*, the basic structural units, or building blocks, of the NS. About 80 per cent of all neurons are found in the brain, particularly in the *cerebral cortex*, the topmost outer layer. Information is passed from neuron to neuron in the form of *electrochemical impulses*, which constitute the 'language' of the NS. There are three main kinds of neuron:

- *sensory* (or *afferent*), which carry information from the sense organs to the central nervous system (CNS)
- *motor* (or *efferent*), which carry information from the CNS to the muscles and glands
- *interneurons* (or *connector neurons*), which connect neurons to other neurons and integrate the activities of sensory and motor neurons; interneurons are the most numerous and constitute about 97 per cent of the total number of neurons in the CNS.

Although no two neurons are identical, most share the same basic structure, and they work in essentially the same way. Figure 4.2 (page 56) shows a typical motor neuron.

The cell body (or *soma*) houses the *nucleus* (which contains the genetic code), the *cytoplasm* (which feeds the nucleus) and the other structures common to all living cells. The *dendrites* branch out from the cell body, and it's through the dendrites that the neuron makes electrochemical contact with other neurons, by receiving incoming signals from neighbouring neurons. The *axon* is a thin cylinder of protoplasm, which projects away from the cell body and carries the signals received by the dendrites to other neurons. The *myelin sheath* is a white, fatty substance, which insulates the axon and speeds up the rate of conduction of signals down the axon and towards the *terminal buttons* (or *boutons* or *synaptic knobs*). The myelin sheath isn't continuous but is interrupted by the *nodes of Ranvier*.

In the spinal cord, a neuron may have an axon two to three feet long, running from the tip of the spine down to

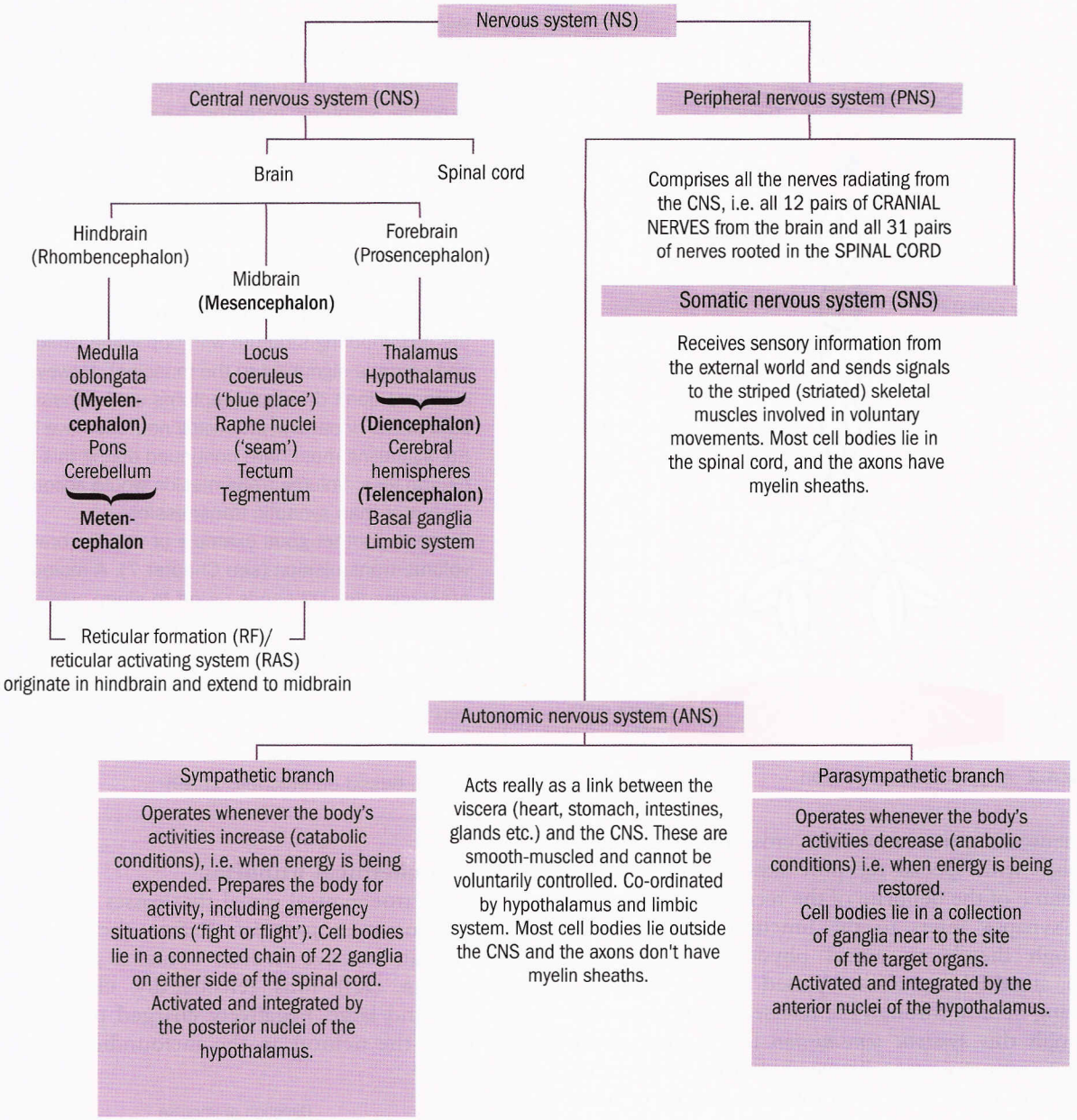


Figure 4.1 Major subdivisions of the human nervous system (including the main subdivisions of the brain)

the big toe. In the brain, neurons are only a few one-thousandths of an inch long. Axons of motor neurons that terminate in muscles end in a series of branches, tipped by *motor endplates*, each of which is attached to a single muscle fibre. Impulses at the motor endplate cause the muscle to contract (as in raising the arm).

A *nerve* is a bundle of elongated axons belonging to hundreds or thousands of neurons. Nerves spread out to every part of the body and connect with sense receptors, skin, muscles and internal organs. Twelve pairs of *cranial nerves* leave the brain through holes in the skull, and 31 pairs of *spinal nerves* leave the spinal cord through the vertebrae. Together, they constitute the nerves of the *peripheral nervous system* (PNS: see Fig. 4.1). Nerves are usually large enough to be seen with the naked eye, while neurons can only be seen with the help of a powerful microscope.

Communication between neurons

As Figure 4.3 (page 56) shows, the terminal buttons house a number of tiny sacs, or *synaptic vesicles*, which contain between 10 and 100,000 molecules of a chemical messenger called a *neurotransmitter*. When an *electrochemical impulse* has passed down the axon, it arrives at a terminal button and stimulates the vesicles to discharge their contents into the minute gap between the end of the terminal button (the *presynaptic membrane*) and the dendrite of the receiving neuron (the *postsynaptic membrane*) called the *synaptic cleft* (or *gap*).

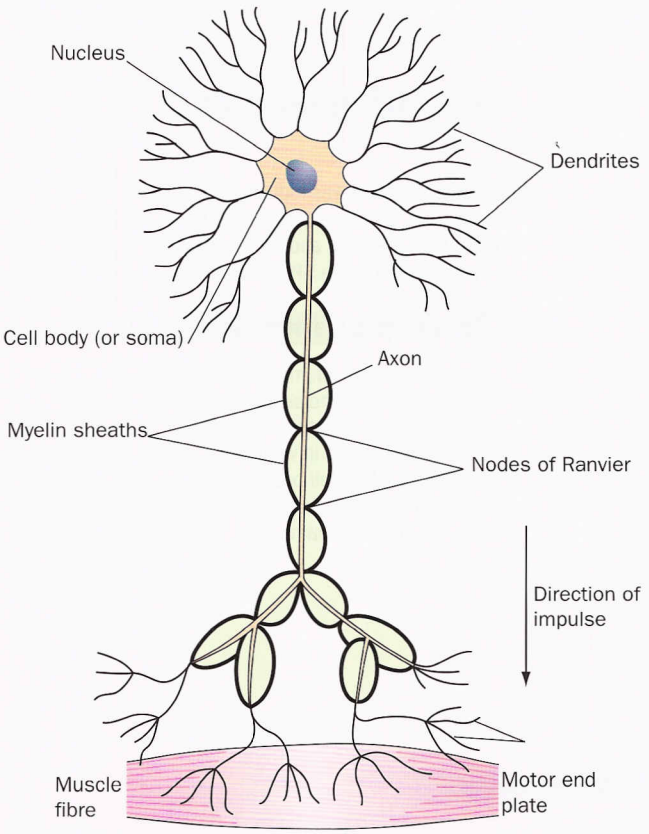


Figure 4.2 A typical motor neuron

The neurotransmitter molecules cross the synaptic gap and combine with special receptor sites in the postsynaptic membrane of the dendrite of the receiving neuron. So, the term 'synapse' refers to the junction between neurons (although there's no actual physical contact between them), at which signals are passed from a sending to a receiving neuron through the release of neurotransmitters. Although this *synaptic transmission* is the most common form of communication between neurons (Iversen, 1979), 20 per cent of the brain is completely devoid of neurons. Instead of forming a solid mass, the neurons are interspersed with a convoluted network of fluid-filled spaces or cavities. According to Mitchell (1999), there's a growing body of opinion that neurons can communicate with large regions of the brain by releasing chemicals into these watery spaces. This is called *volume transmission*, which is seen as *complementary* to synaptic transmission.

RESEARCH UPDATE 4.1: What evidence is there for 'volume transmission?

- Researchers tracked a neurotransmitter (neuropeptide Y) in rats' brains and found receptors that were sometimes several millimetres (a million times the width of a synaptic gap) away from the source of the neurotransmitter. Synaptic transmission couldn't work on this sort of scale – but volume transmission could.
- Receptors for *serotonin* and *dopamine* (two major transmitters: see Table 4.1, page 58) have also been identified away from their most likely locations. For example, serotonin receptors have been found on *axons*: only if serotonin could travel via volume transmission would you expect to find receptors there.
- Although not everyone accepts the idea of volume transmission, there are certain global patterns of activity that it's very difficult to explain in any other way. For example, Parkinson's disease sufferers seem to lose neurons in the substantia nigra, a brain region that normally supplies the neighbouring striatum with dopamine (which initiates and controls signalling to the muscles). However, sufferers don't develop symptoms until a massive 80 per cent of the dopamine-producing neurons have been lost. So, signalling must have continued during this period of neuron loss. Volume transmission would account for this far better than synaptic transmission.
- Sleep is another good example of why the brain needs volume transmission (see Chapter 7). A molecule called *prostaglandins D2* sends us off to sleep, whereas *prostaglandins E2* helps to wake us up. The enzyme that produces *D2* comes mainly from non-neuronal cells in the brain; it may reach its target by diffusing through the cerebrospinal fluid (CSF), which surrounds and bathes the neurons.

(Source: based on Mitchell, 1999)

Electrochemical impulses

The electrochemical signal that passes down the axon is called an *action potential*. Before the action potential occurs, an inactive neuron contains positively charged potassium (K^+) ions (electrically charged potassium atoms) and large, negatively charged protein molecules. Outside the neuron, in the surrounding fluid, there are

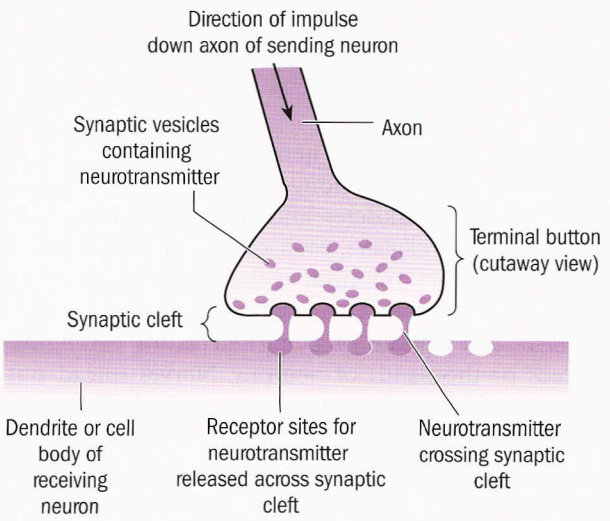


Figure 4.3 The synapse

concentrations of positively charged sodium ions (Na^+) and negatively charged chloride ions (Cl^-). The large, negatively charged, protein ions are trapped inside the neuron, while the positively charged sodium ions are kept out by the action of the *sodium-potassium pumps* in the cell membrane, which allow potassium (and chloride) ions to move in and out fairly freely.

The overall effect of this uneven distribution of ions is that the inside of the cell is electrically negative relative to the outside (by about 70 millivolts). The neuron is said to be *impermeable* to the positively charged sodium ions (its resting state or *resting potential*). When an action potential occurs, the inside of the neuron momentarily changes from negative to positive (+40 millivolts), the sodium channels are opened (for one millisecond) and sodium ions flood into the neuron (it's now permeable to sodium ions). This sets off a chain reaction, whereby the sodium channels open at adjacent membrane sites all the way down the axon. But almost as soon as the sodium channels are opened, they close again: potassium channels are opened instead, allowing potassium ions out through the membrane and restoring the negative resting potential.

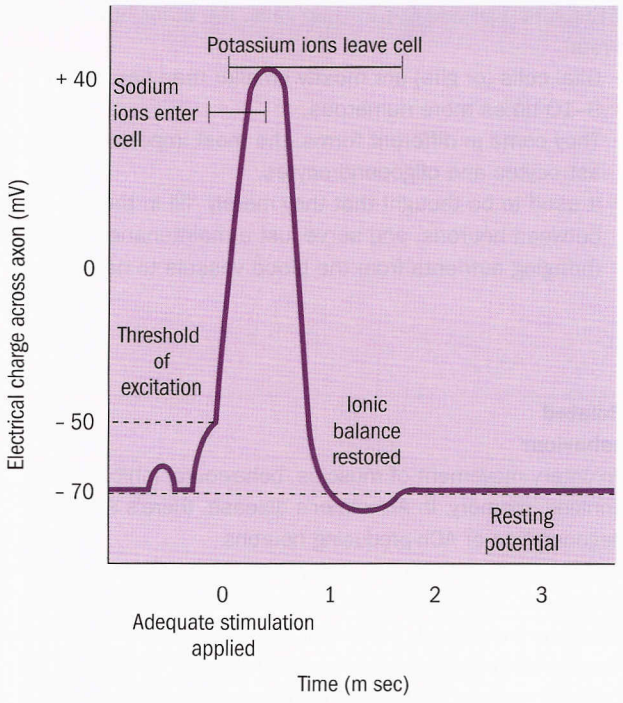


Figure 4.4 The sequence of events when a neuron 'fires'. The small 'bump' on the left represents an incoming message that was not strong enough to cause the neuron to fire

Because the myelin sheath isn't continuous, but is segmented (the axon is actually exposed at the nodes of Ranvier: see Figure 4.2), the action potential jumps from one node to another down the axon. This is called *saltatory conduction*, which is actually faster than if the sheaths were continuous.

Response threshold

The stimulus to the neuron must be intense enough to produce an action potential (it must exceed the *threshold of response*). But once this has occurred, it travels at the same speed to the end of the axon. So, an impulse is either present or absent (the *all-or-none rule*). Action potentials are all of the same strength (*amplitude*), so the intensity of the stimulus is measured by:

- the *frequency of firing* – the stronger the stimulus, the more often the neuron will fire (a very strong stimulus producing a volley of impulses)
- the *number of neurons stimulated* – the stronger the stimulus, the greater the number of neurons stimulated.

However strong the stimulus, there's always a very short interval after each firing (1–2 milliseconds), during which no further impulse can pass (the *absolute refractory period*). This is followed by a *relative refractory period*: the stronger the stimulus, the shorter the interval between the absolute refractory period and the next impulse.

Different types of synapses

Some synapses are *excitatory* (they 'instruct' the receiving neuron to 'fire' – that is, to conduct an action potential), while others are *inhibitory* (they 'instruct' the receiving neuron not to 'fire'). Because each neuron may have between 1000 and 10,000 synapses, some of which will be excitatory and some inhibitory, the 'decision' to fire or not will depend on the combined effect of all its receiving synapses. If enough excitatory synapses are active, their combined effect may add up to exceed the threshold for firing of the receiving neuron (this is called *summation*).

Inhibitory synapses are important because they help control the spread of excitation through the highly interconnected NS, keeping activity channelled in appropriate networks or 'circuits'. Epileptic seizures (fits), for example, may be caused by excitation of many different brain circuits at the same time and, if it weren't for inhibition, we might all be having seizures much of the time.

Different types of neurotransmitter

What makes a synapse either excitatory or inhibitory is the particular neurotransmitter(s) contained within the vesicles of the synaptic button. A region on the surface of the receptor site is precisely tailored to match the shape of the transmitter molecule (in a lock-and-key fashion). The effect of the transmitter is brought to an end either by *deactivation* (where it's destroyed by special enzymes) or by *reuptake* (where it's pumped back into the presynaptic axon, either for destruction or recycling).

According to Iversen (1979), there are at least 30 different neurotransmitters in the brain, each with its specific excitatory or inhibitory effect on certain

neurons. Neurotransmitters aren't randomly distributed throughout the brain, but are localised in specific groups of neurons and pathways. Some of the major transmitters and their effects are shown in Table 4.1.

As a general rule, a single neuron will store and release the same neurotransmitter in all its axon terminals. So, *cholinergic*, *noradrenergic*, *dopaminergic* and *serotonergic* neurons use ACh, noradrenaline, dopamine and serotonin respectively. However, there's some evidence that more than one kind of transmitter may be released from the same synaptic button, depending on the pattern of action potentials reaching it (Lloyd *et al.*, 1984).

Neurotransmitters have a fairly direct influence on receiving neurons. But *neuromodulators* 'tune' or 'prime' neurons, enabling them to respond in a particular way to later stimulation by a neurotransmitter. Neuromodulators include certain *neuropeptides* (see Table 4.1), notably the *enkephalins* ('in the head') and the *endorphins* ('morphine within').

Box 4.1 Opioids: the brain's natural painkillers?

- The enkephalins and endorphins are also known as opioids, because functionally they resemble the opium drugs morphine, heroin and opium itself (see Chapter 8). Morphine is commonly used for the relief of severe, intractable pain, and the discovery of 'opiate receptors' in the neurons strongly suggested that the brain creates its own powerful painkiller.
- Enkephalins and endorphins seemed to fit the bill, and they may work by interfering with the release of transmitters from the presynaptic membrane of neurons that transmit information about pain.
- It's thought that they're released during acupuncture and hypnosis, producing a reduction in perceived pain, although pain information probably still reaches the brain (as it's not the pain receptors that are directly influenced: see Chapter 12).
- It's also believed that placebos ('dummy drugs') work by influencing the release of endorphins in response to the belief that an active drug was given (Hamilton & Timmons, 1995: see Chapters 12 and 45).

Other neuropeptides are found as hormones, including:

- *vasopressin*, which is thought to play a role in memory (see Chapter 17)
- *corticosteroids* ('stress hormones') and *adrenocorticotrophic hormone* (ACTH), which are involved in stress reactions (see Chapter 12) and emotional arousal (see Chapter 10)
- *androgens* (male sex hormones), which regulate sex drive in both sexes (see Table 4.3, page 74 and Box 36.1, pages 621–622).

RESEARCH UPDATE 4.2: Glial cells: the other half of the brain

- Glial cells (or glia) are mostly smaller than neurons and 9–10 times more numerous.
- They come in different forms, the most important being astrocytes and oligodendrocytes.
- It used to be thought that they merely 'fill in the space' between neurons, and serve just a maintenance role (bringing nutrients from the blood vessels to neurons,

Table 4.1 Major transmitters and their effects

Neurotransmitter	Effect on receiving neuron	Related behaviour
Acetylcholine (ACh)	Generally *excitatory*, but can be *inhibitory*,depending on the type of receptor molecule involved	Voluntary movement of muscles, behavioural inhibition, drinking, memory. In Alzheimer's disease, there's a degeneration of ACh-producing neurons
Noradrenaline (norepinephrine)*	*Inhibitory* (in CNS); *excitatory* (in ANS)	Wakefulness and arousal (behavioural and emotional), eating, depression and mania (see Chapters 44 and 45)
Dopamine*	*Inhibitory* and *excitatory*	Voluntary movement, emotional arousal. Parkinson's disease involves degeneration of dopamine-releasing neurons. Schizophrenia is associated with excess of dopamine (see Chapter 44)
Serotonin*	*Inhibitory* and *excitatory*.	Sleep (see Chapter 7), temperature regulation
GABA (gamma aminobutyric acid)	*Inhibitory* (the most common inhibitor in CNS)	Motor behaviour. Huntington's disease may result from degeneration of GABA cells in the corpus striatum
Glycine	*Inhibitory* (found in spinal cord)	Spinal reflexes and other motor behaviour
Neuromodulators (neuropeptides; e.g. enkephalins and endorphins)	*Inhibitory* and *excitatory*	Sensory transmission, especially pain (see Chapter 12)

* Monoamine (MAO) transmitters

maintaining a healthy balance of ions in the brain, and warding off pathogens that evaded the immune system: see Figure 12.7, page 207).
- Imaging studies have shown, however, that neurons and glial cells engage in a two-way dialogue, beginning in the embryo and continuing through to old age. Glial cells help to determine which neural connections get stronger or weaker over time. These changes are essential to learning and storing long-term memories.
- Glial cells also communicate between themselves, in a separate but parallel network to the neural network, influencing the brain's overall level of performance.
- They influence the formation of synapses, and oligodendrocytes provide the insulating myelin sheath around the axon of the neuron (see page 56).
- Astrocytes regulate signalling across the synapse. They may (a) strengthen it by secreting the same neurotransmitter, or (b) weaken it by absorbing the neurotransmitter or secreting proteins that bind to it, thereby preventing it from reaching its target. Modifying the connections between neurons is one way the brain revises its responses to stimuli as it accumulates experience (in other words, how it learns).
- The proportion of glial cells to neurons increases considerably as animals move up the evolutionary ladder. Extensive connectivity among astrocytes might contribute to greater learning capacity. It could be that what distinguishes geniuses (such as Einstein) from 'mere mortals' is a higher concentration of glial cells, or a more potent type of glia.
- According to Fields (2004), neuroscientists 'are excited by the prospect that more than half the brain has gone largely unexplored and may contain a trove of information about how the mind works'.

(Source: based on Fields, 2004).

THE CENTRAL NERVOUS SYSTEM (CNS)

Methods of studying the brain

Box 4.2 A classification of methods used to study the brain

- *Clinical/anatomical methods:* studying the effects on behaviour of accidental injury to the brain or brain disease in human beings, or patients who've undergone brain surgery for the treatment of disorders such as epilepsy (in particular, 'split-brain' patients: see pages 70–72).
- *Invasive methods:* surgically removing areas of brain tissue (*ablation*) or causing damage or injury (*lesions*) to particular brain sites or stimulation of the brain, either electrically or chemically. Also included is the recording of the electrical activity of very small areas of the brain, or even single neurons, through the insertion of very fine electrodes (*microelectrode recording*). These methods involve animal subjects and are extremely controversial from an ethical point of view (see Chapter 48).
- *Non-invasive methods:* either the brain's electrical activity is recorded by attaching electrodes to the scalp, or *computerised scanning/imaging techniques* are used to study the living human brain. In either case, the brain isn't interfered with in any way and there's no risk of damage or injury.

Clinical/anatomical methods

One of the earliest methods used to study the CNS was the study of patients who'd suffered brain damage following an accident, or a stroke or tumour. A famous and early example is Paul Broca's discovery of a specialised area of the brain for speech. In 1869, Broca, a French physician, reviewed evidence from a number of cases of brain damage. He concluded that injury to a certain part of the left cerebral hemisphere (the left half of the brain) caused the patient's speech to become slow and laboured, but that the ability to understand speech was almost completely unaffected. What's now called *Broca's area* seems to control the ability to produce speech, and damage to it causes *motor* (or *expressive*) *aphasia*. In 1874, Carl Wernicke reported that injury to a different part of the left hemisphere caused *receptive aphasia*, the inability to understand speech (one's own or someone else's).

These clinical studies of the brain have normally been conducted in parallel with anatomical studies, usually during the course of postmortem examinations. Studying structure and function in a complementary way is essential for an adequate understanding of such a complex organ as the brain. *Split-brain patients* have undergone surgery for epilepsy when all other treatments have failed. The surgery (*commissurotomy*) involves cutting the tissue which connects the two halves of the brain (the corpus callosum). Roger Sperry and his colleagues in the 1960s and 1970s made full use of the unique opportunity to study these 'split brains'. Their work is discussed in detail later in the chapter (see pages 70–72).

Invasive methods

As noted in Box 4.2, parts of the brain may be surgically removed (*ablation*) or an area of the brain may be damaged (rather than removed: the *lesion method*). An early user of the first method was Karl Lashley, working with rats in the 1920s, and it has been used extensively to study the role of the brain in eating (see Chapter 9).

Psychologists are usually interested in destroying areas or structures located deep within the brain. To do this, a *stereotaxic apparatus* is used, which allows the researcher to operate on brain structures that are hidden from view (see Figure 4.5). While the subjects are exclusively non-human animals, stereotaxic surgery is also used with humans, including psychiatric patients (see Chapter 45).

ASK YOURSELF...

- Is it ethically acceptable to use invasive methods with non-human animals?
- How could you justify their use?

(See Chapter 48, pages 878–881.)

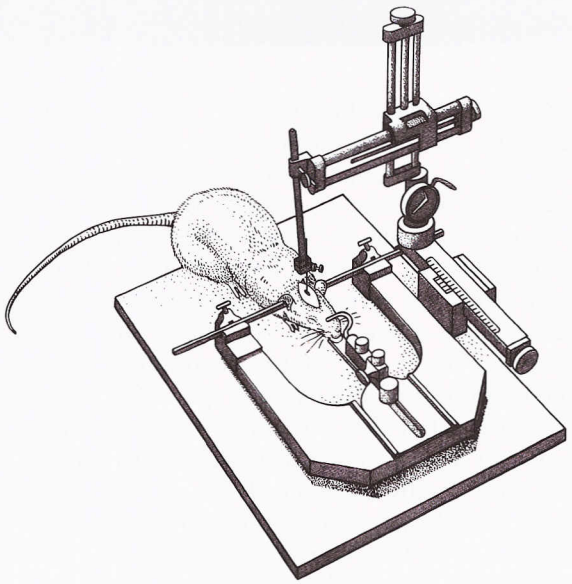


Figure 4.5 A stereotaxic apparatus, used to insert an electrode into a specific portion of an animal's brain (from N. Carlson, 1992, *Foundations of Physiological Psychology*, 2nd edition, Boston, Allyn & Bacon)

Instead of surgically removing or damaging the brain, it can be stimulated. This can be done either (a) *chemically* (using micropipettes to drop drugs known to either increase or decrease the activity of particular neurotransmitters on to specific areas of the brain) or, more commonly, (b) *electrically*, using microelectrodes, whereby precise locations can be stimulated. Again, it's usually non-human animals that are involved (see Figure 4.6 and Chapter 9), but sometimes patients already undergoing surgery for a brain tumour or some other abnormality (such as epilepsy) are studied. Here, the neurosurgeon takes advantage of the fact that the patient is conscious, alert and able to report memories, sensations, and so on, produced by the stimulation. Wilder Penfield pioneered this kind of research in the 1950s (and through it discovered the 'Penfield homunculus': see Figure 4.9, page 64).

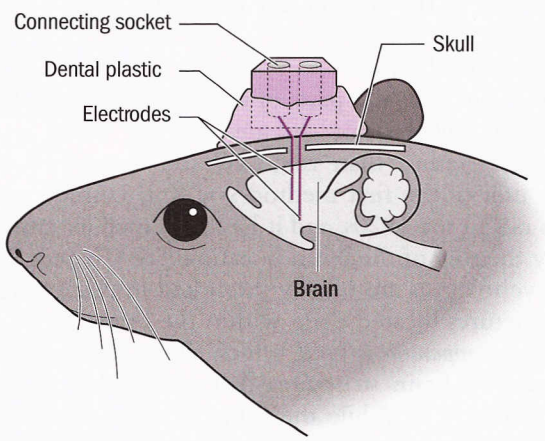
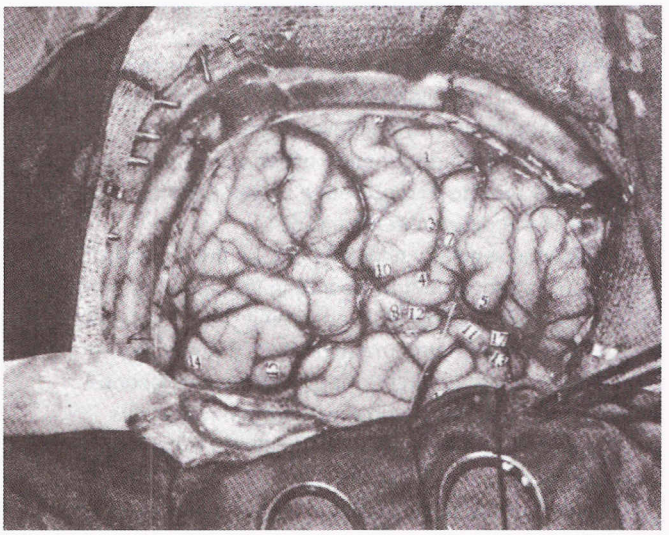


Figure 4.6 Electrical stimulation of the brain



Photograph taken during surgery carried out by Penfield. The numbers refer to the parts of the cortex stimulated (Oxford University Press)

Microelectrodes are also used to record the electrical activity in individual neurons when the subject (usually a cat or monkey) is presented with various kinds of stimuli. This method was used by Hubel and Wiesel in the 1960s to study visual feature detectors (see Chapters 5 and 14).

Non-invasive methods

The electroencephalogram (EEG)

The electrical activity of the brain can also be recorded from the outside, by fitting electrodes (passive sensors) to the scalp. The activity can be traced on paper, and typical brainwave patterns associated with various states of arousal have been found. The EEG records action potentials for large groups of neurons and has been used extensively in the study of states of consciousness, including sleep. Related to this is the *electromyogram* (EMG), which records the electrical activity of muscles, and the *electrooculogram* (EOG), which records eye movements, both of which are, like the EEG, used in sleep research (see Chapter 7).

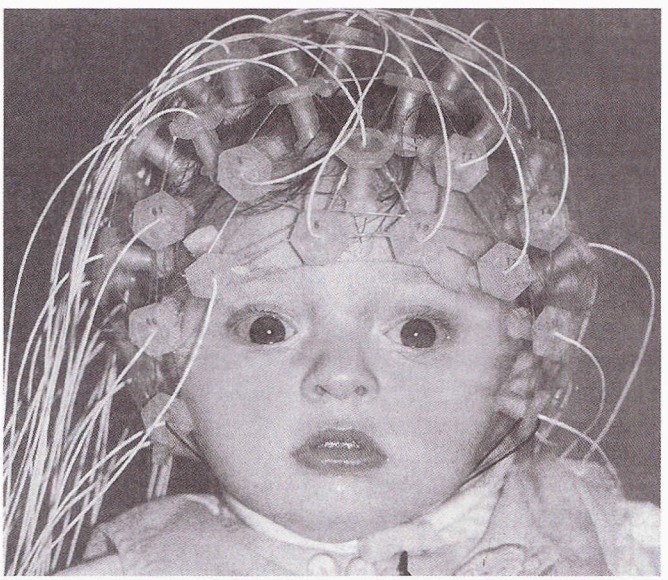
Average evoked potentials (AEPs)

A brief change in the EEG may be produced by the presentation of a single stimulus, but the effect may well be lost (or obscured) in the overall pattern of waves. However, if the stimulus is presented repeatedly and the results averaged by a computer, other waves cancel out and the evoked response can be detected. This technique

has shown that an identical visual stimulus yields different AEPs according to the meaning the participant attaches to it.

EEG imaging and the geodesic net

While the EEG involves a small number of electrodes, EEG *imaging* records the brain's electrical activity using 32 electrodes. This is fed to a computer, which translates it into coloured moving images on a TV monitor. While originally developed for investigating convulsive seizures, it has been adapted for studying brain development in babies in the form of a *geodesic net*. This consists of 64 or 132 electrodes, whose combined output produces a map of the active regions across the baby's head. The computer then calculates the likely brain areas that generated the voltages observed on the scalp. The geodesic net is unlikely to rival the spatial accuracy of adult scanning methods (see below), but its resolution over time is far superior, allowing the study of brain events 'at the speed of thought' (Johnson, 2000). One area of research that has made use of the geodesic net is infants' perception of faces (see Chapter 16).



A geodesic sensor net being used to study brain activity in an infant

Radioactive labelling

This is a relatively recent method of studying the CNS, which takes advantage of the brain's flexible use of blood-borne oxygen. A radioactive isotope is added to the blood, causing low levels of radioactivity, which increase as greater blood flow occurs in more active areas of the brain. A scanner next to the head feeds radiation readings to a computer, which produces a coloured map of the most and least active brain regions: different regions change colour as the person attempts a variety of tasks or is presented with a variety of stimuli.

Computerised axial tomography (CAT)

A moving X-ray beam takes pictures from different positions around the head, and these are converted by the computer into 'brain slices' (apparent cross-sections of the brain). CAT scanning is used primarily for the detection and diagnosis of brain injury and disease.

Positron emission tomography (PET)

This uses the same computer-calculation approach as CAT, but uses radiation for the information from which the brain slices are computed. A radioactive tracer is added to a substance used by the body (such as oxygen or glucose). As the marked substance is metabolised, PET shows the pattern of how it's being used. For example, more or less use of glucose could indicate a tumour, and changes are revealed when the eyes are opened or closed. PET diagnoses brain abnormalities more efficiently than CAT.

Magnetic resonance imaging (MRI)

This is like a CAT scan, but instead of using radiation, it passes an extremely strong magnetic field through the

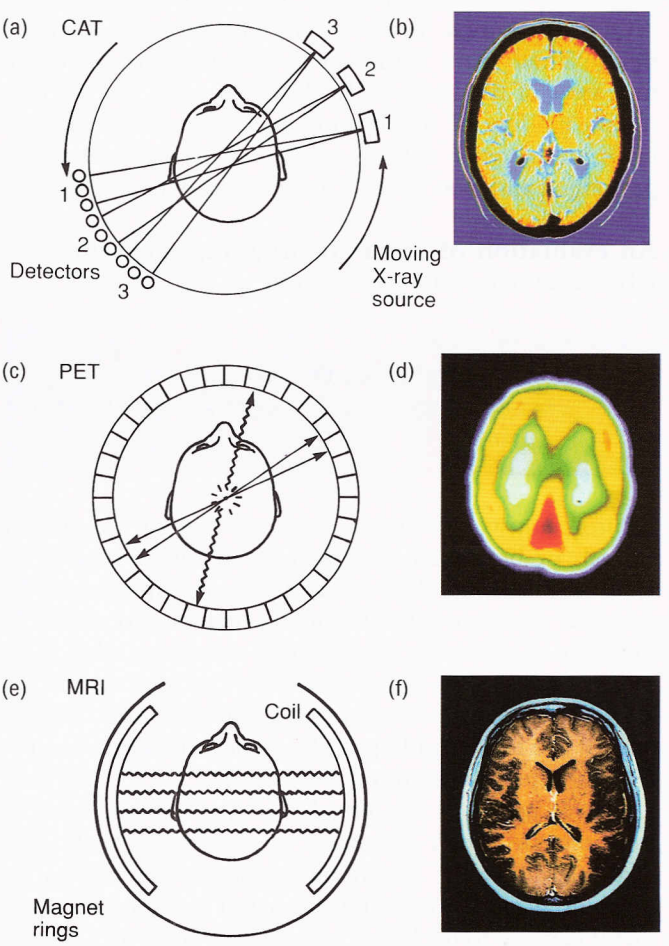


Figure 4.7 Non-invasive techniques (a), (c) and (e) used to study detailed sections of the living human brain (b), (d) and (f)

head and measures its effects on the rotation of atomic nuclei of some element in the body. Again, a computerised cross-sectional image is produced. So far only hydrogen nuclei have been used. Because hydrogen molecules are present in substantially different concentrations in different brain structures, the MRI can use the information to prepare pictures of brain slices which are much clearer (higher resolution) than CAT pictures.

Functional MRI (fMRI)

The MRI can identify the smallest tumour, or the slightest reduction in blood flow in a vein or artery. But it shares with CAT the limitation of only providing *still* images of brain slices. This tells us very little about brain *function*. To remedy this, fMRI monitors blood flow in the brain over time as people perform different kinds of task, so it's used as much to study the normal as the damaged/diseased brain.

SPECT and SQUID

The most recent imaging techniques are *single-photon/positron emission computerised tomography* (SPECT) (which, like PET, tracks blood flow through the brain), and *superconducting quantum imaging/interference device* (SQUID) (which detects tiny changes in magnetic fields). Their main advantage is that they can focus on tiny areas of the brain. SPECT has revealed that there is significant loss of functioning in the front part of the brain in patients with *Korsakoff's syndrome*, caused by prolonged and heavy use of alcohol (see Chapter 8).

An evaluation of scanning/imaging techniques: what they can and cannot tell us

ASK YOURSELF...

- What would you say are the main advantages of using scanning/imaging techniques compared with other methods?

Neuroscientists no longer have to rely on laboratory animals or brain-damaged patients requiring surgery to view what's taking place inside the brain as it happens. We can now peer into a healthy living brain and observe the moment-to-moment changes that occur in relation to mental activity. But this *doesn't* mean that we can literally look inside someone's *mind* (see Chapter 49 for a discussion of the long-standing philosophical debate about the relationship between mind and brain).

As we noted in the *Introduction and overview* section, psychologists aren't interested in the brain for its own sake, but for what it can tell us about the control of psychological functions and abilities. It's tempting to infer that if damage to (or loss of) a particular brain area is associated with the loss of (or reduction in) a particular ability, then that part of the brain normally controls that ability. Unfortunately, there are other possibilities. For example, the damaged area might itself be controlled by a different (undamaged) area, or the damage may have disrupted the normal functioning of nearby, or related, intact areas. (See the discussion of split-brain patients below, pages 70–72.)

How does the brain develop?

One of the most remarkable things about the human brain is the staggering complexity of the *interconnections* between the neurons. Given the 8–10 billion neurons in the brain, each of which may have 1000–10,000 synaptic connections with other neurons, it's been estimated that there are more possible ways in which the neurons of a single human brain can be interconnected than there are atoms in the known universe!

At birth, the baby has almost its full complement of neurons, and the brain is closer to its adult size than any other organ. It represents 10 per cent of the baby's total body weight compared with 2 per cent of the adult's. At six months, the brain is already half its eventual adult weight; at 12 months, 60 per cent; at five years, 90 per cent; and at 10 years 95 per cent. The brain reaches its maximum weight by about 20 years.

Box 4.3 Major aspects of infant brain development

While the major development *before* birth is the growth of neurons, brain growth *after* birth is the result of four major changes.

1. The growth of *synaptic connections* between neighbouring neurons accounts for much of the increase in brain volume. However, there are also *regressive/subtractive events*: the density of synapses increases until it's even greater than in adults (usually about 150 per cent of adult levels), followed by the death of many synapses. This reduces the overall number to those normally observed in adults. It seems that the less useful connections are 'pruned', leaving only those that have proved useful. A similar pattern is found for complexity of dendrites and for measures of energy used by the brain (Johnson, 2000).
2. Neurons *increase in size* (but not in number), as do synapses.
3. *Glial cells* develop (see Research Update 4.2, page 58).
4. The oligodendrocytes produce the *myelin sheaths*, which grow around the axons to insulate the neuron and speed up the conduction of action potentials (again, see Research Update 4.2).

If the absolute size of the brain determined level of intelligence, then humans would certainly be surpassed by many species. Even if we take the brain size/body size ratio, house mice, porpoises, tree shrews and squirrel monkeys would still come higher in the intelligence league than humans. Clearly, it's the *kind* of brain that

matters. What seems to be unique about the human brain is the proportion of it that isn't devoted to particular physical and psychological functions, and that is 'free' to facilitate our intelligence, our general ability to think, reason, use language and learn.

THE MAJOR STRUCTURES AND FUNCTIONS OF THE BRAIN

As Figure 4.8 shows, during the first five weeks of foetal life, the neural tube changes its shape to produce five bulbous enlargements. These are generally accepted as the basic divisions of the brain, namely the *myelencephalon* (the medulla oblongata), the *metencephalon* (the pons and cerebellum), the *mesencephalon* (the tectum and tegmentum), the *diencephalon* (thalamus and hypothalamus) and the *telencephalon* (the cerebral hemispheres or cerebrum, basal ganglia and limbic system). 'Encephalon' means 'within the head'.

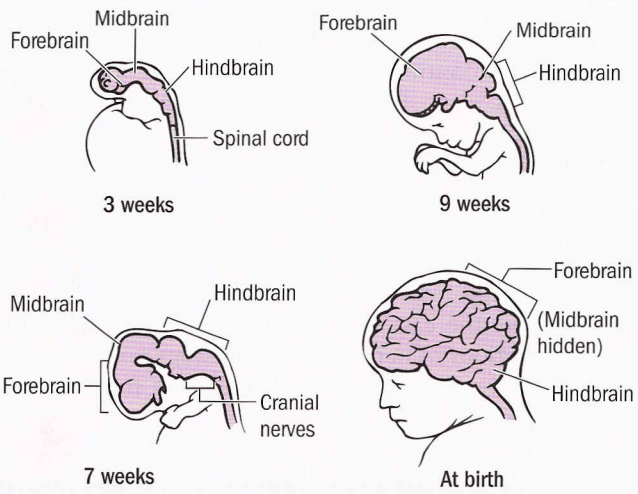


Figure 4.8 The human brain at four stages of development

As shown in Figure 4.1, the myelencephalon and metencephalon together make up the *hindbrain*, the mesencephalon constitutes the *midbrain*, and the diencephalon and telencephalon make up the *forebrain*.

The forebrain

The cerebral hemispheres (or cerebrum)

The cerebral hemispheres are the two largest structures at the top of the brain, which enfold (and, therefore, conceal from view) most other brain structures. If you removed an intact brain, its appearance would be dominated by the massive hemispheres, with just the cerebellum showing at the back (see Figure 4.9).

The top layer of the cerebrum (about 1 cm at its deepest) is the *cerebral cortex* (usually just called 'cortex', which means 'bark'). It is highly convoluted (wrinkled), which is necessary in order to pack its 2.5-square-foot surface area into the relatively small space inside the skull. The cortex is pinkish-grey in colour (hence 'grey matter'), but below it the cerebrum consists of much thicker white matter, composed of myelinated axons (the cortex consists of cell bodies).

There's a large crevice running along the cerebrum from front to back (the *longitudinal fissure/sulcus*), which divides the two hemispheres. But they're connected further down by a dense mass of commissurial ('joining') fibres called the *corpus callosum* (or 'hard body').

There are two other natural dividing lines in each hemisphere: the *lateral fissure* (or *fissure of Sylvius*) and the *central fissure* (or *fissure of Rolando*). The lateral fissure separates the *temporal lobe* from the *frontal lobe* (anteriorly: towards the front) and from the *parietal lobe* (posteriorly: from the back), while the central fissure separates the frontal and parietal lobes. The *occipital lobe* is situated behind the parietal lobe and is at the back of the head. This division of the cortex into four lobes – named after the bones beneath which they lie – is a feature of *both* hemispheres, which are mirror images of each other.

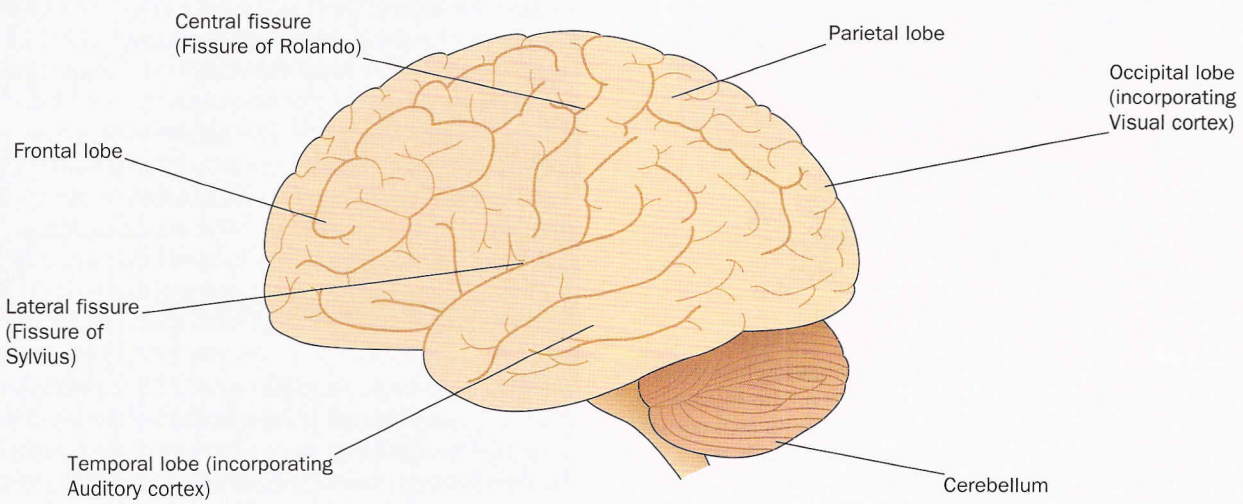


Figure 4.9 Lateral (side-on) view of the human brain (left cerebral hemisphere)

The *primary visual cortex* is found in the occipital lobe, the *primary auditory cortex* in the temporal lobe, the *primary somatosensory* (or *body-sense*) cortex in the parietal lobe, and the *primary motor cortex* in the frontal lobe (see Chapter 5). The somatosensory cortex and motor cortex are perhaps the most well-defined areas, both showing *contralateral control*: areas in the right hemisphere receive information from, and are concerned with the activities of, the left side of the body, and vice versa. The crossing over (*corticospinal decussation*) takes place in the medulla (part of the brainstem). These areas represent the body in an upside-down fashion, so information from the feet, for example, is received by neurons at the top of the area.

Furthermore, the amount of cortex devoted to different parts of the body is related to the *sensitivity* and *importance* of that part of the body – *not* to its size. For example, fingers have much more cortex devoted to them than the trunk in the motor cortex, and the lips have a very large representation in the somatosensory cortex (see Figure 4.10). Broca's area is found in the frontal lobe and Wernicke's area borders the temporal and parietal lobes, but only in the left hemisphere. (We shall say more about this under localisation of brain function: see pages 68–70)

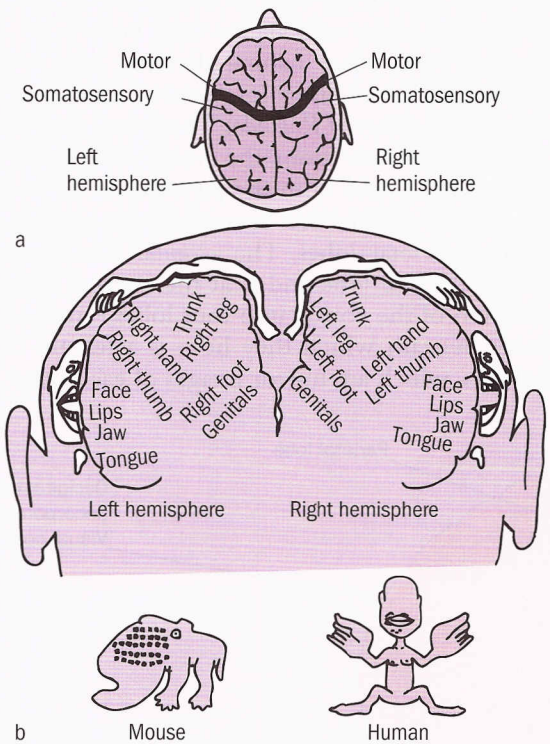


Figure 4.10 Animunculi and homunculi showing how much cortical tissue is devoted to each body area. The mouse explores with its nose and each whisker has its own cortical area. We can use our hands for sensing, although we normally rely more on vision. The large face of the homunculus reflects the large cortical areas necessary for the control of speech. This is sometimes called the Penfield homunculus, after Wilder Penfield who discovered it

The cortex and body image

ASK YOURSELF...

- What do you understand by the term 'body image'?
- Do you have a sense of being 'in' your body, or is your body just a part or extension of 'you'?

The *homunculus* ('little man') in Figure 4.10 depicts how the body is represented by the brain. We each have a 'body image', which forms a fundamental part of our overall sense of ourselves as a stable, embodied 'self' (see Chapter 33). Usually, we just 'know' what our arms and legs are doing without having to look: they do what we 'ask' them to. The 'body map' represented by the homunculus may appear to be 'hard-wired' into our brain. But our body image can become distorted, and when it does, the disability it causes can be every bit as devastating as injuring the equivalent part of the body. If a stroke or accident damages the brain region housing the body map, patients may lose the use of a perfectly healthy limb – even though the brain areas that directly control movement remain intact (Phillips, 2000). Conversely, amputees can continue to experience their missing arm or leg as if it were still attached: this is the *phantom limb* phenomenon.

As Ramachandran & Blakeslee (1998) point out, the Penfield 'map' doesn't represent precisely the body's basic organisation. For example, the face isn't near the neck, where it 'should be', but is below the hand. The genitals, instead of being between the thighs, are located *below the foot* (they cite the case of a female leg amputee, who had strange sensations in her phantom foot after sex!). This lack of a perfect match can help explain at least some cases of phantom limbs.

Box 4.4 The case of the phantom hand

Tom Sorenson lost a hand in a car accident, after which his arm was amputated just above the elbow. When his *face* was touched in various places, he experienced sensations in his phantom thumb, index finger, little finger and so on. The whole surface of his hand was mapped out beautifully on his cheek. As Figure 4.11 shows, Tom also had a second 'map' of the missing hand, tucked into his left upper arm a few inches above the amputation line. Stroking the skin surface on this second map also produced precisely localised sensations on individual fingers.

How can we explain this apparently bizarre phenomenon? Ramachandran & Blakeslee (1998) believe the secret lies in the peculiar mapping of body parts in the brain. On the Penfield map, the hand area in the brain is flanked below by the face area and above by the upper arm/shoulder area. Sensory fibres originating from Tom's face (which normally activate *only* the face area in the cortex) invaded space left

vacant by the amputated hand. The same happened with fibres originating in the upper arm/shoulder. The brain generated the feeling of the hand from the signals coming from another part of the body.

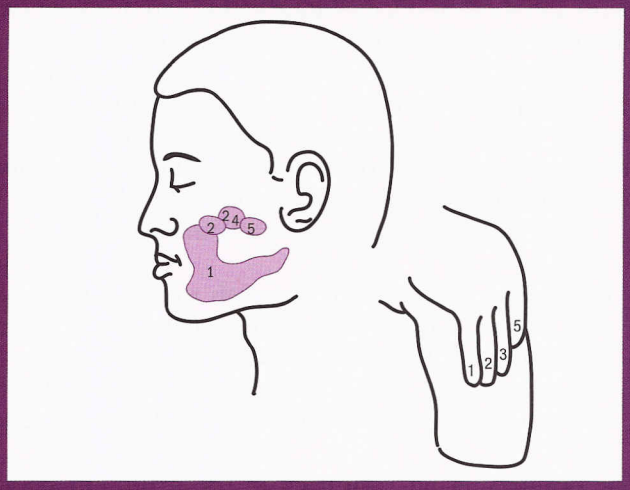


Figure 4.11 Points on the body surface that produced referred sensations in the phantom hand (from Ramachandran & Blakeslee, 1998, reproduced with permission from HarperCollins Publishers Ltd)

ASK YOURSELF...

- What conclusions can you draw from the case of Tom's phantom hand regarding the potential for change in brain circuitry in adulthood?

These findings imply that very precise and highly organised new connections can be formed in the adult brain extremely quickly – at least in some patients. According to Ramachandran and Blakeslee, cases such as Tom's contradict the widely held belief that once neurological circuitry is laid down in the foetus or early infancy, little modification is possible in adulthood. They argue that the phantom doesn't reside in the stump, but in the cortex, where the re-mapping has occurred. As they say:

... every time Tom smiles or moves his face and lips, the impulses activate the 'hand' area of his cortex, creating the illusion that his hand is still there. Stimulated by all these spurious signals, Tom's brain literally hallucinates his arm and perhaps this is the essence of the phantom limb ...

Box 4.5 Demonstrating the flexibility of your brain's body image

- Sit at a table and recruit a helper. Hide one hand under the table, resting palm down on your knee. Then ask your helper to tap, touch and stroke with his/her fingertips the back of your hidden hand and the table top directly above the hand with an identical pattern of movements, for a minute or two.
- It's important to concentrate on the table, where your helper is touching, and to make sure you cannot see your hand or your helper's hand under the table. The more irregular the pattern, and the more synchronised the touches you can see and feel, the more likely you are to feel something very strange. The table starts to feel like part of your body – as though the hand is transferred into the table!
- According to Ramachandran and Blakeslee, just as an amputee might experience a phantom limb, so our entire body image is a phantom – something the brain constructs for convenience.

(Source: based on Phillips, 2000)

Can the brain repair itself?

If Ramachandran and Blakeslee's explanation of phantom limbs is correct, then the adult brain seems capable of compensating for damage or loss quite well, by making new connections between *existing* neurons. But this is very different from the claim that the brain can *repair* itself (produce new neurons to replace damaged ones). Until very recently, most neurobiologists firmly believed that the brain lacks the remarkable *stem cells* that account for much of the repair involved in skin, bone and other body cells. However, Kempermann & Gage (1999) cite research showing that the mature human brain *does* produce new neurons at least in one site – the hippocampus (see below, page 67). According to Kempermann and Gage:

... Current data suggest that stem cells probably make new neurons in another part of the human brain and also reside, albeit dormantly, in additional locations. Hence, the adult brain, which repairs itself so poorly, might actually harbour great potential for neuronal regeneration ...

If we can learn how to induce existing stem cells to produce useful numbers of functioning neurons in selected brain regions, the practical benefits for people suffering from Alzheimer's and Parkinson's disease, and disabilities caused by strokes and trauma, would be enormous (Kempermann & Gage, 1999).

Association areas in the cortex

The primary motor and sensory areas account for only about 25 per cent of the cortex's surface area, leaving about 75 per cent without an obvious sensory or motor function. This *association cortex* is where the 'higher mental functions' (cognitive processes, such as thinking, reasoning, planning and deciding) probably 'occur'. However, much less is known about where these functions are localised, compared with certain aspects of memory, perception and language.

What is clear is that cortex isn't necessary for biological survival (which is controlled by various *subcortical*

structures). Some species (birds, for example) don't have one to begin with, and in those that do, surgical removal doesn't prevent the animal from displaying a wide range of behaviour (although it becomes much more automatic and stereotyped). The human brain has a greater proportion of association cortex than any other species.

The thalamus ('deep chamber')

There are actually two thalami, situated deep in the forebrain (between the brainstem and the cerebral hemispheres). Each is an egg-shaped mass of grey matter and represents a crucial link between the cerebrum and the sense organs. All sensory signals pass through the thalamus, which serves as a relay station or major integrator of information flowing in from the sense organs to the cortex. Each contains nuclei that are specialised to handle particular types of signal:

- the *ventrobasal complex* takes information fed in from the body via the spinal cord
- the *lateral geniculate* ('bent') *body* (LGB) processes visual information (see Chapter 5)
- the *medial geniculate body* (MGB) processes auditory information.

The thalamus also receives information from the cortex, mainly dealing with complex limb movements, which are directed to the cerebellum. Another part of the thalamus plays a part in sleep and waking (see Chapter 7).

> ***ASK YOURSELF...***
> • What role does the thalamus play in theories of emotion? (See Chapter 10, pages 159–168.)

The hypothalamus ('under the thalamus')

For its size (about equal to the tip of your index finger), the hypothalamus is a remarkable and extremely important part of the brain. It plays a major part in homoeostasis (control of the body's internal environment) and motivation, including eating and drinking (see Chapter 9), sexual behaviour, emotional arousal and stress (see Chapter 12). Seven areas can be identified, each with its own special function: *posterior* (sex drive); *anterior* (water balance); *supraoptic* (also water balance); *presupraoptic* (heat control); *ventromedial* (hunger); *dorsomedial* (aggression); and *dorsal* (pleasure).

The hypothalamus works basically in two ways:

1. by sending electrochemical signals to the entire ANS (see Figure 4.1), so that it represents a major link between the CNS and the ANS
2. by influencing the *pituitary gland*, to which it's connected by a network of blood vessels and neurons.

The pituitary gland is situated in the brain, just below and to one side of the hypothalamus. However, it's actually part of the endocrine (hormonal) system (see pages 73–75).

Basal ganglia ('nerve knots')

These are embedded in the mass of white matter of each cerebral hemisphere. They are themselves small areas of grey matter, comprising a number of smaller structures:

- the *corpus striatum* ('striped body'), composed of the *lentiform nucleus* and *caudate nucleus*
- the *amygdala* ('almond')
- the *substantia nigra* (which is also part of the tegmentum, usually classified as part of the midbrain).

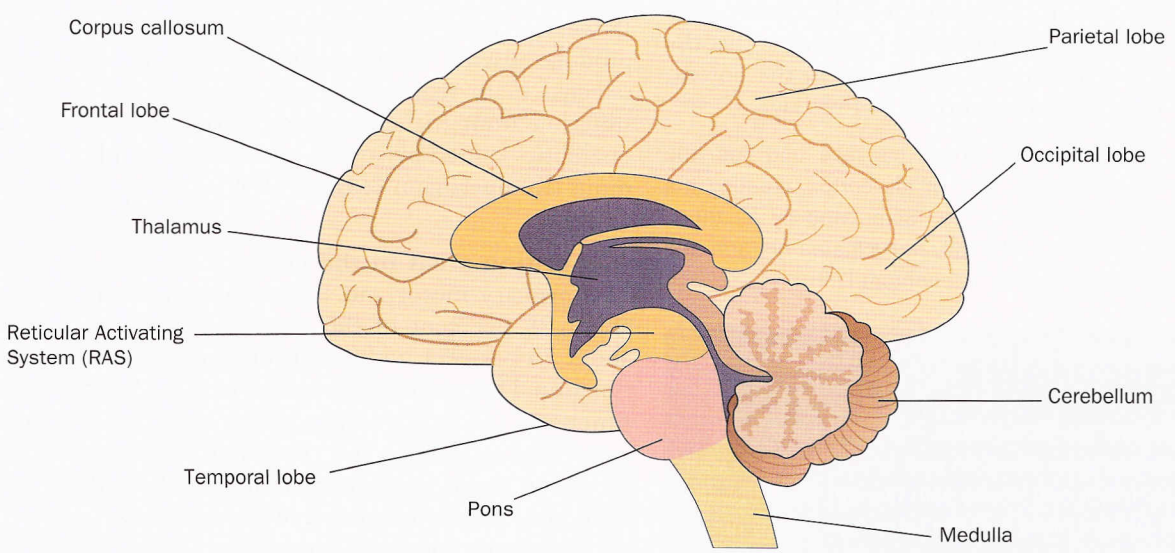


Figure 4.12 Front-to-back cross-section of the right cerebral hemisphere

These structures are closely linked to the thalamus, and they seem to play a part in muscle tone and posture by integrating and coordinating the main voluntary muscle movements, which are the concern of the great descending motor pathway (the *pyramidal system*). Information from the cortex is relayed to the brainstem and cerebellum.

The limbic system ('bordering')

This isn't a separate structure, but comprises a number of highly inter-related structures which, when seen from the side, seem to nest inside each other, encircling the brainstem in a 'wishbone' (see Figure 4.13). The major structures are: (i) the thalami bodies; (ii) hypothalamus; (iii) mamillary bodies; (iv) septum pellucidum; (v) cingulate gyrus; (vi) hippocampus; (vii) amygdala; (viii) fornix; and (ix) olfactory bulbs.

The human limbic system is very similar to that of primitive mammals, and so is often called 'the old mammalian brain'. It's also sometimes called the 'nose brain', because much of its development seems to have been related to the olfactory sense (and, of course, the olfactory bulb, which is concerned with the sense of smell, is one of its components). It's closely involved with behaviours that satisfy certain motivational and emotional needs, including feeding, fighting, escape and mating.

The limbic system as a whole serves as a meeting place between the cortex (or 'neocortex', in evolutionary terms the most recent part of the brain to have developed) and older parts of the brain, such as the hypothalamus. From the cortex it receives interpreted information about the world, and from the hypothalamus information about the body's internal state. These are integrated and the 'conclusions' are fed back to the cortex and to the older, subcortical areas.

The midbrain

This is really an extension of the brainstem connecting the forebrain to the spinal cord. The main structure is the *reticular activating system* (RAS) or *reticular formation* (RF). This ascends from the spinal cord to the forebrain carrying mainly sensory information (the ARAS), and descends from the forebrain to the spinal cord carrying mainly motor information. Since it begins in the spinal cord and passes through the brainstem, it's often classified as part of the hindbrain in addition to the midbrain.

Box 4.6 Major functions of the ARAS

- The ARAS is vitally important in maintaining our general level of arousal or alertness (it's often called the '*consciousness switch*') and plays an important part (but by no means the only one) in the sleep–wake cycle (see Chapter 7).
- It also plays a part in selective attention. Although it responds unselectively to all kinds of stimulation, it helps to screen extraneous sensory information by, for example, controlling *habituation* to constant sources of stimulation, and making us alert and responsive mainly to *changes* in stimulation (see Chapter 7).
- Sleeping parents who keep 'one ear open' for the baby who might start to cry are relying on their ARAS to let only very important sensory signals through. So, it acts as a kind of sentry for the cortex. Damage can induce a coma-like state of sleep.

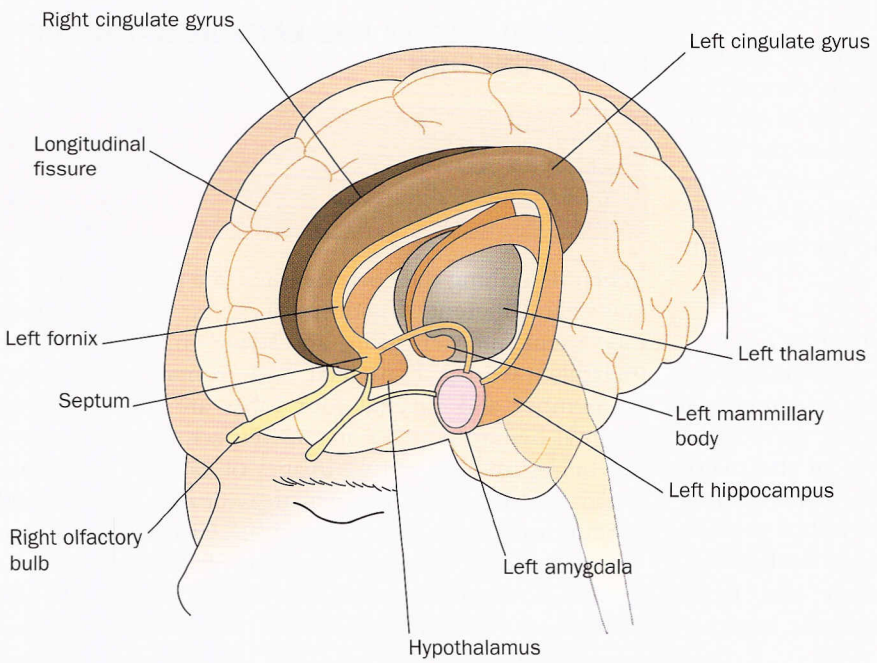


Figure 4.13 The major structures of the limbic system: the thalami bodies, the hypothalamus, the mammillary bodies, the hippocampus, the amygdala, the septum, the fornix and the cingulate gyrus. Also illustrated are the olfactory bulbs, which are connected to several limbic structures (from J. Pinel, 1993, *Biopsychology*, Boston, Allyn & Bacon)

The midbrain also contains important centres for visual and auditory reflexes, including the *orienting reflex*, a general response to a novel stimulus. Other structures include the *locus coeruleus* (see Chapter 7), the *raphne nuclei*, the *tectum* and the *tegmentum*.

The hindbrain

Cerebellum ('little brain')

Like the cerebrum, the cerebellum consists of two halves or hemispheres, and is even more convoluted than the cortex. It plays a vital role in the coordination of voluntary (skeletal) muscle activity, balance and fine movements (such as reaching for things). Motor commands that originate in higher brain centres are processed here before transmission to the muscles. Damage to the cerebellum can cause hand tremors, drunken movements and loss of balance. The inability to reach for objects normally (*ataxia*) and hand tremors are quite common among the elderly.

The cerebellum also controls the intricate movements involved in the swimming of a fish, the flying of a bird, playing a musical instrument and driving a car. Once learned, complex movements like those involved in picking up a glass, walking and talking seem to be 'programmed' into the cerebellum. This allows us do them 'automatically' without having to think consciously about what we're doing (it acts as an 'automatic pilot' inside the brain).

The cerebellum accounts for about 11 per cent of the brain's entire weight; only the cerebrum is larger. Its grey matter in fact consists of three layers of cells, the middle layer of which – the *Purkinje cells* – can link each synapse with up to 100,000 other neurons, more than any other kind of brain cell.

The pons ('bridge')

This is a bulge of white matter that connects the two halves of the cerebellum. It's an important connection between the midbrain and the medulla, and is vital in integrating the movements of the two sides of the body. Four of the 12 cranial nerves (which originate in the brain) have their nuclei ('relay stations') here, including the large *trigeminal* nerve. It's the middle portion of the brainstem.

The medulla oblongata ('rather long marrow')

This is a fibrous section of the lower brainstem (about 2 cm long), and is really a thick extension of the spinal cord. In evolutionary terms, it's the oldest part of the brain and is the site of the crossing over of the major nerve tracts coming up from the spinal cord and coming down from the brain. It contains vital reflex centres, which control breathing, cardiac function, swallowing, vomiting, coughing, chewing, salivation and facial movements. The midbrain, pons and medulla together make up the *brainstem*.

THE SPINAL CORD

The spinal cord is about the thickness of a little finger. It passes from the brainstem down the whole length of the back and is encased in the vertebrae of the spine. The spinal cord is the main communication 'cable' between the brain (CNS) and the peripheral nervous system (PNS), providing the pathway between body and brain.

Messages enter and leave the spinal cord by means of 31 pairs of spinal nerves. Each pair innervates a different and fairly specific part of the body and are 'mixed nerves': they contain both *motor neurons* (carrying information from the NS to the muscles) and *sensory neurons* (carrying information from the sensory receptors to the NS) for most of their length. But at the junction with the cord itself, the nerves divide into two roots – the *dorsal root* (towards the back of the body), which contains sensory neurons, and the *ventral root* (towards the front of the body), which contains motor neurons.

The basic functional unit of the NS is the *spinal reflex arc*, such as the knee-jerk reflex. This involves just two kinds of neuron: a sensory neuron conveys information about stimulation of the patella tendon (knee cap) to the spinal cord, and this information crosses a single synapse within the grey 'butterfly' (which runs inside the centre of the cord: see Figure 4.14, page 69). This causes a motor neuron to stimulate the appropriate muscle groups in the leg, which causes the leg to shoot up in the air.

However, most spinal reflexes are more complex than this. For example, withdrawing your hand from a hot plate will involve an interneuron (as well as a sensory and motor neuron) and two synapses. Commonly, the experience of pain follows one to two seconds after you have withdrawn your hand – this is how long it takes for sensory information to reach the cortex.

THE LOCALISATION AND LATERALISATION OF BRAIN FUNCTION

ASK YOURSELF...
- What do you understand by these two terms?
- How are they different?

When describing the cortex earlier (see pages 63–65), we saw that different functions, such as vision, hearing, movement and sensation, are *located* in different lobes (occipital, temporal, parietal and frontal, respectively). Remember also that all four lobes are found in both cerebral hemispheres, so, in this respect, the hemispheres can be regarded as mirror images of each other. We also noted that there are distinct areas dealing with speech production and comprehension (Broca's area and Wernicke's area, respectively), again illustrating *functional localisation*. However, these are found *only* in the left hemisphere, illustrating *functional lateralisation* (or *hemispheric asymmetry*).

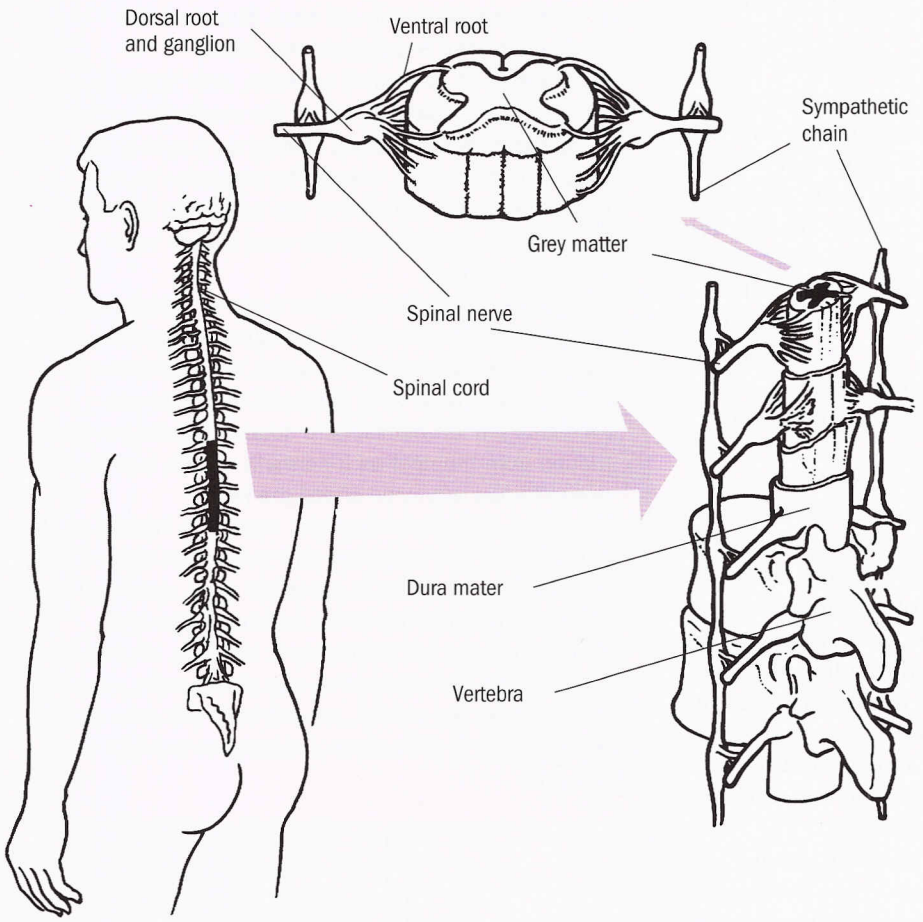


Figure 4.14 The spinal cord and spinal nerves (from Rosenzweig & Leiman, 1989). The left diagram shows a general view of the spinal column with a pair of nerves emerging from each level. The right diagram shows how the spinal cord is surrounded by bony vertebra and enclosed in a membrane, the dura mater. Each vertebra has an opening on each side through which the spinal nerves pass. The top diagram shows the location of the spinal cord grey matter and the white matter that surrounds it. In the grey matter are interneurons and the motor neurons that send axons to the muscles. The white matter consists of myelinated axons that run up and down the spinal column

Lateralisation, language and handedness

Much of the discussion of lateralisaton has focused on language. From studies of stroke victims in particular, it's generally agreed that for the majority of right-handed people, their left hemisphere is dominant for speech (and language ability in general). People paralysed down their *right* side must have suffered damage to the *left* hemisphere and, if they've also suffered aphasia (see page 59), then we can infer that language is normally controlled by the *left* hemisphere.

One of the difficulties associated with generalisations in psychology (even with something as 'biological' as cerebral function) is the existence of *individual differences*. Some people seem to have much more lateralised brains than others, while some have language more or less equally represented on both sides (*bilateral representation*: Beaumont, 1988). The left hemisphere seems to be dominant for language for 95 per cent of right-handed patients, while only 5 per cent had their right hemisphere dominant. But with left-handers, things are much less clear-cut: 75 per cent had their left hemisphere dominant, none had the right dominant, but 25 per cent showed bilateral representation (based on a review by Satz (1979) of all studies between 1935 and 1975; cited in Beaumont, 1988).

Box 4.7 Are women really superior when it comes to language?

- Over and above this left/right-handed difference, women show *less lateralisation* than men for both linguistic and other abilities. This means that left-hemisphere damage would produce greater deficits in language ability for men (at least, most right-handed men) than it would in (most right-handed) women.
- This difference is thought to underlie females' advantage over males on a variety of linguistic tasks, from detection of dichotic syllables (where different auditory signals are presented to the two ears) to the generation of synonyms.
- However, neuroimaging studies using fMRI (see page 62) have shown that men and women can perform identical language processes with the same degree of functional capacity – but, apparently, using very differently organised brain systems.
- One attempt to replicate these findings (Frost *et al.*, 1999) found that both sexes showed very similar, strongly left-lateralised activation patterns. Although sex differences may exist at a microscopic neural level, these aren't detectable using currently available fMRI methods.

(Source: based on Esgate, 1999)

The effects of brain damage: is it 'where' or 'how much' that matters?

In the majority of right-handed people, is the dominance of the left hemisphere a built-in characteristic or is it modifiable? According to Zaidel (1978), the two hemispheres are fairly equal up until about age five. In general, a child's brain is much more *plastic* (flexible) than an adult's (Rose, 1976). For example, in children up to three years, brain trauma produces similar effects regardless of which site is damaged. Provided the lesion isn't too severe, or that it occurs on one side only, considerable recovery is possible: the corresponding area on the other side takes over the function of the damaged area, and this seems to be especially true of language (see Chapter 19).

This seems to support the conclusions of Lashley, who (in the 1920s) studied the effects of brain destruction on rats' learning ability. His (1929) *law of mass action* states that the learning of difficult problems depends upon the *amount of damage* to the cortex, and not on the position or site of the damage. In other words, the greater the cortical damage, the greater the learning difficulty. However, Lashley couldn't find specific neural circuits related to the learning of, or memory for, particular types of problem. The *law of equipotentiality* states that corresponding parts of the brain are capable of taking over the function normally performed by the damaged area.

Similarly, the *principle of multiple control* maintains that any particular part of the brain is likely to be involved in the performance of many different types of behaviour. For example, rats with lesions in their lateral hypothalamus show deficits in certain learning situations, as well as impaired feeding (see Chapter 9). Conversely, the same behaviour (such as aggression or emotion) normally involves a number of brain sites. The logical conclusion of this seems to be that the brain functions as a complete unit, an integrated whole. We shall return to this issue below.

Split-brain patients

Remember that split-brain patients have undergone surgery (normally in the treatment of epilepsy) to cut their corpus callosum, which joins the two hemispheres and allows them to exchange information. While the surgery may relieve the epilepsy, it has a major side-effect: the two hemispheres become functionally separate (they act as two separate, independent brains). Sperry (based on a number of studies in the 1960s and 1970s, for which he was awarded the Nobel Prize for Medicine in 1981) and Ornstein (1975) believe that split-brain studies reveal the 'true' nature of the two hemispheres, and that each embodies a different kind of consciousness (see Chapter 7). A typical split-brain experiment is described in Key Study 4.1.

ASK YOURSELF...

- What do the following examples suggest regarding the right hemisphere's linguistic abilities?

KEY STUDY 4.1 When the left brain literally doesn't know what the left hand is doing (Sperry, 1968)

- Participants sit in front of a screen, their hands free to handle objects that are behind the screen but which are obscured from sight. While fixating on a spot in the middle of the screen, a word (for example, 'key') is flashed on to the left side of the screen for a tenth of a second (this ensures that the word is only 'seen' by the right hemisphere).
- If asked to select the key from a pile of objects with the left hand (still controlled by the right hemisphere), this can be done quite easily. However, the participant is unable to say what word appeared on the screen (because the left hemisphere doesn't receive the information from the right as it normally would), and literally doesn't know why s/he chose the key.
- This time, a word (for example, 'heart') is flashed on the screen, with 'he' to the left and 'art' to the right of the fixation point. If asked to name the word, participants will say 'art', because this is the portion of the word projected to the left hemisphere. However, when asked to point with the left hand to one of two cards on which 'he' and 'art' are written, the left hand will point to 'he', because this is the portion projected to the right hemisphere.

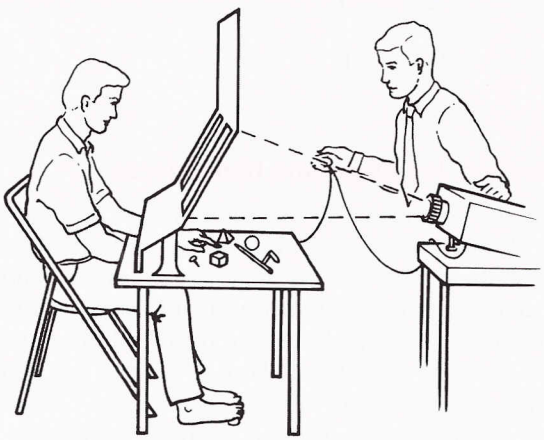


Figure 4.15 Apparatus for studying lateralisation of visual, tactile, lingual and associated functions in the surgically separated hemispheres (from Sperry, 1968)

These examples show that the right hemisphere doesn't completely lack language ability – otherwise participants couldn't successfully point or select. However, it clearly lacks the left hemisphere's ability to name and articulate what has been experienced. In the second example, both hemispheres are handicapped if information isn't conveyed from one to the other – the whole word ('heart') isn't perceived by either!

A similar, but perhaps more dramatic, example involved sets of photographs of different faces. Each photo was cut down the middle and halves of two

different faces were pasted together. They were then presented in such a way that the left side of the photo would only be visible to the right hemisphere, and vice-versa.

ASK YOURSELF...

- If a picture of an old man were presented to the left hemisphere and a young boy to the right, and participants were asked to *describe what they'd seen* (the *left hemisphere* responding), what would they have said?
- If asked to *point with their left hand* to the complete photo of the person they'd seen (the *right hemisphere* responding), which picture would they have pointed to?

In the first case, they said 'an old man', and in the second case, they pointed to the young boy. It seems that two completely separate visual worlds can exist within the same head!

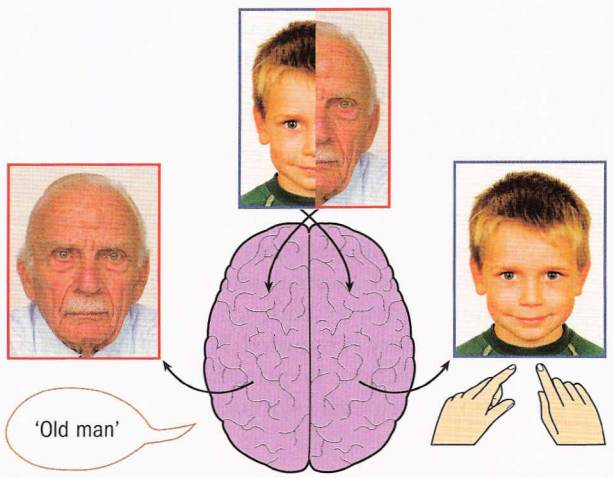


Figure 4.16 Responses given by the left and right hemispheres to a chimeric

One brain or two? One mind or two?

These and many more equally dramatic experiments led Sperry, Ornstein and others to conclude that each of the separated hemispheres has its own private sensations, perceptions, thoughts, feelings and memories. In short, they constitute two separate minds, two separate spheres of consciousness (Sperry, 1964; see Figure 4.17). Levy-Agresti & Sperry (1968) concluded that the:

> ... mute, minor hemisphere is specialized for Gestalt perception, being primarily a synthesist in dealing with information input. The speaking, major hemisphere, in contrast, seems to operate in a more logical, analytic, computer-like fashion ...

Cohen (1975) argues that long-standing presurgical pathology might have caused an abnormal reorganisation of the brains of these split-brain patients, so that generalising to normal people might not be valid. Several attempts have been made to move beyond the simplistic left hemisphere/right hemisphere, verbal/non-verbal distinction, both in normal participants and in split-brain patients. In a review of research, Annett (1991) says that 'it is evident that each hemisphere has some role in the functions assigned to the other'. For example, the right hemisphere has a considerable understanding of language and it's been suggested that it might be responsible for semantic errors made by deep dyslexics (see Chapter 40). Similarly, the left hemisphere is almost certainly responsible for the production of imagery, 'which is likely to be required in much spatial thinking'.

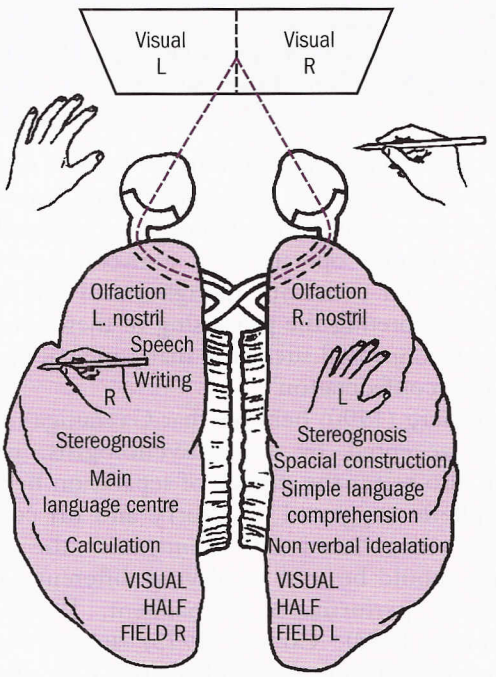


Figure 4.17 Schematic outline of the functional lateralisation evident in behavioural tests of patients with forebrain commissurotomy (from Sperry, 1968)

Box 4.8 The major differences between the left and right hemispheres

Ornstein (1986) summarises the differences as follows:

- the *left* is specialised for *analytic and logical thinking* (breaking things down into their component parts), especially in verbal and mathematical functions, processes information *sequentially* (one item at a time), and its mode of operation is primarily *linear* (straight line);
- the *right* is specialised for *synthetic thinking* (bringing different things together to form a whole), particularly in the area of spatial tasks, artistic activities, crafts, body image and face recognition, processes information more *diffusely* (several items at once), and its mode of operation is much *less linear* (more *holistic*).

ASK YOURSELF...

- Should we generalise about hemispheric differences from studies of split-brain patients?

According to Gazzaniga (1985), the brain is organised in a *modular fashion* – that is, organised into relatively independent functioning units, which work in parallel. Many of the modules operate at a non-conscious level, in parallel to our conscious thought, with the left hemisphere interpreting the processing of these modules. So, brains are organised such that many mental systems co-exist in a 'confederation'.

Sternberg (1990) believes that Gazzaniga's view isn't widely accepted by neuropsychologists; but many would also reject the degree of separation between the hemispheres suggested by Sperry and his co-workers. An alternative view is one of *integration*: the two hemispheres should be seen as playing different parts in an integrated performance (Broadbent, 1985, cited in Sternberg, 1990). Cohen (1975) agrees that, when normal participants are studied, the two sides of the brain don't function in isolation but form a highly integrated system. Most everyday tasks involve a mixture of 'left' and 'right' skills. For example, in listening to speech, we analyse both the words and the intonation pattern, and when reading we analyse visual shapes and draw on our linguistic knowledge. Far from doing their own thing, the two hemispheres work very much together (Cohen, 1975).

McCrone (1999) concludes that researchers have come to see the distinction between the two hemispheres as a subtle one of *processing style*, with every mental faculty shared across the brain, and each side contributing in a *complementary*, not exclusive, fashion. Evidence from imaging studies suggests that the left hemisphere 'prefers' (or pays more attention to) detail (such as grammar and specific word production), while the right prefers the overall meaning of what's being said (as conveyed by intonation and emphasis). This is consistent with the finding that people with right-hemisphere stroke damage become much more *literal* in their interpretation of language. However, a 'smart' brain is one that responds in *both* ways. As McCrone (1999) says:

> ... whatever the story about lateralization, simple dichotomies are out. It is how the two sides of the brain complement and combine that counts.

THE AUTONOMIC NERVOUS SYSTEM (ANS)

As shown in Figure 4.1, the ANS is the part of the PNS that controls the internal organs and glands of the body over which we have little (or no) voluntary control. It comprises two branches:

1. the *sympathetic*, which takes over whenever the body needs to use its energy (as in emergencies: the 'fight or flight' syndrome), and
2. the *parasympathetic*, which is dominant when the body is at 'rest' and energy is being built up.

Although the two branches work in essentially opposite ways, they're both equally necessary for the maintenance of the delicately balanced internal state of *homoeostasis* (see Chapter 9). Sometimes, a sequence of sympathetic and parasympathetic activity is required. For example, in sexual arousal in men, erection is primarily parasympathetic, while ejaculation is primarily sympathetic.

Table 4.2 Major sympathetic and parasympathetic reactions

	Organ or function affected	Sympathetic reaction	Parasympathetic reaction
1	Heart rate	Increase	Decrease
2	Blood pressure	Increase	Decrease
3	Secretion of saliva	Suppressed (mouth feels dry)	Stimulated
4	Pupils	Dilate (to aid vision)	Contract
5	Limbs (and trunk)	Dilation of blood vessels of the voluntary muscles (to help us run faster, for example)	Contraction of these blood vessels
6	Peristalsis (contraction of stomach and intestines)	Slows down (you don't feel hungry in an emergency)	Speeds up
7	Galvanic skin response (GSR) (measure of the electrical resistance of the skin)	Decreases (due to increased sweating associated with increased anxiety)	Increases
8	Bladder muscles	Relaxed (there may be temporary loss of bladder control)	Contracted
9	Adrenal glands	Stimulated to secrete more adrenaline and noradrenaline	Reduced secretion
10	Breathing rate	Increased (through dilation of bronchi)	Decreased
11	Liver	Glucose (stored as glycogen) is released into the blood to increase energy	Sugar is stored
12	Emotion	Experience of strong emotion	Less extreme emotions

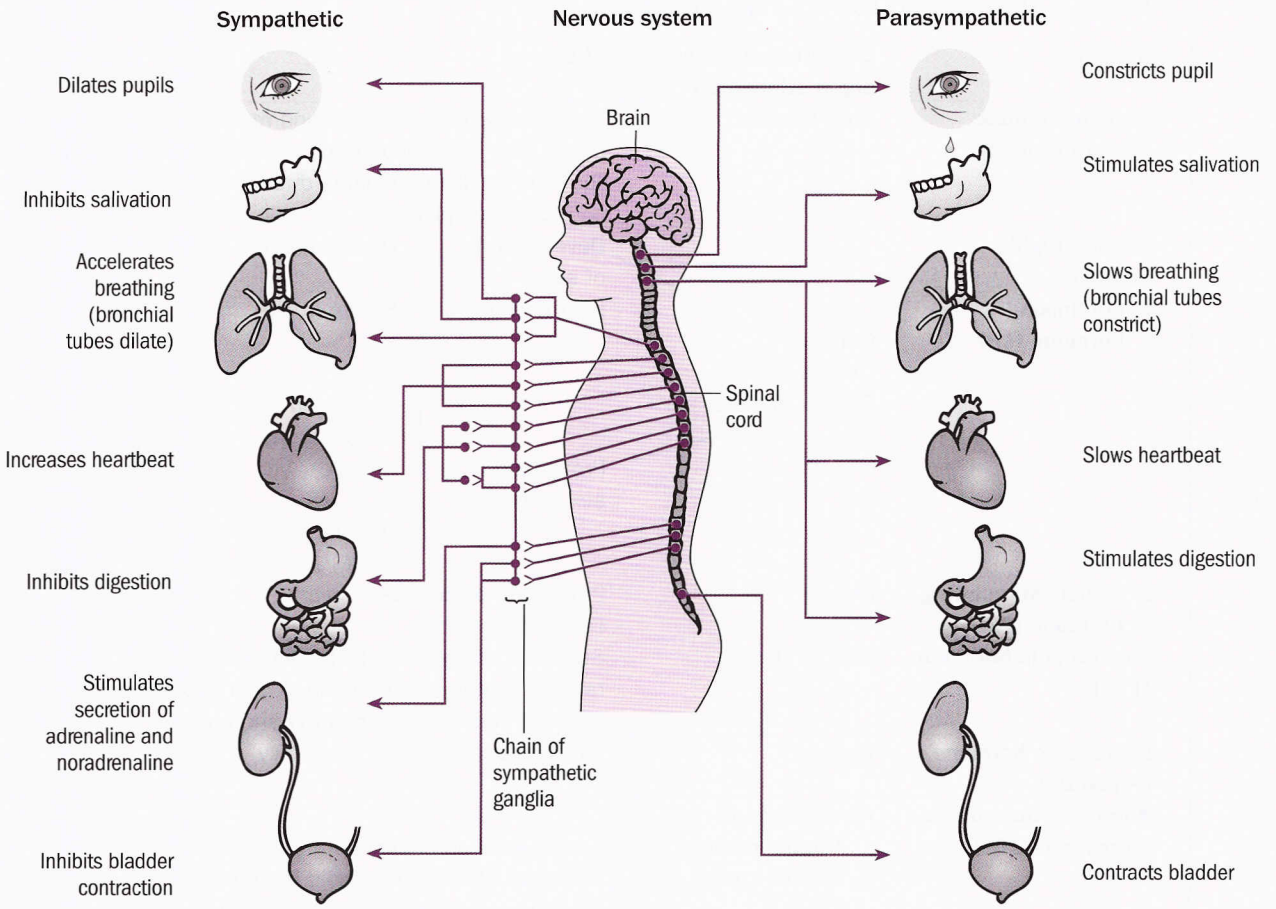


Figure 4.18 Some of the organs affected by the two branches of the ANS (from Hassett & White, 1989)

The ANS produces its effects in two ways:

1. by direct neural stimulation of body organs
2. by stimulating the release of hormones from the endocrine glands (see below).

In both cases, the *hypothalamus* is the orchestrator. The ANS is discussed further in Chapter 10, in relation to emotion, and in Chapter 12, in relation to stress.

THE ENDOCRINE SYSTEM

Endocrine glands secrete *hormones* (chemical messengers) which, unlike neurotransmitters, are released directly into the bloodstream and are carried throughout the body. While an electrochemical impulse can convey a message in a matter of milliseconds, it may take several seconds for a hormone to be stimulated, released and reach its destination. Consequently, where an immediate behavioural reaction is required (for example, a reflex action), the NS plays a major role. Hormones are better suited to communicating steady, relatively unchanging messages over prolonged periods of time (for example, the body changes associated with puberty: see Chapter 37).

Box 4.9 The pituitary gland

- The major endocrine gland is the *pituitary gland*, which is physically (but not functionally) part of the brain (situated just below the hypothalamus).
- It is often called the 'master gland', because it produces the largest number of different hormones, and also because it controls the secretion of several other endocrine glands.
- The pituitary comprises two independently functioning parts: the *posterior* and the *anterior*. The former transmits hormones that are thought to be manufactured in the hypothalamus, while the latter is stimulated by the hypothalamus to produce its own hormones.
- The major hormones of the posterior and anterior lobes of the pituitary are shown, along with their effects, in Table 4.3, page 74.

Other important endocrine glands are the *adrenals* (situated just above the kidneys), each of which comprises the *adrenal medulla* (inner core) and the *adrenal cortex* (outer layer). As Table 4.3 shows, the medulla secretes *adrenaline* and *noradrenaline*, which are the transmitter substances for the sympathetic branch of the ANS.

Table 4.3 Major pituitary hormones and their effects

	Hormone	Endocrine gland or organ stimulated	Effects
Anterior pituitary	**Growth hormone (somatotrophin)**	Body tissues	Increases growth of bones and muscles, particularly in childhood and adolescence. Too little produces pituitary dwarfism and too much gigantism
	Gonadotrophic hormones		
	1 Luteinising hormone (LH)	Gonads (Testes–male, Ovaries–female)	Development of sex (germ) cells: Ova (female); Sperm (male)
			Production of sex hormones: Oestrogen and progesterone (female); Testosterone (male)
	2 Follicle-stimulating hormone (FSH)	Ovaries	Production of follicles in ovary during ovulation
	Thyrotrophic hormone (TTH)	Thyroid gland	Secretion of thyroxin which controls metabolic rate – too little causes lethargy and depression, too much causes hyperactivity and anxiety
	Lactogenic hormone (Prolactin)	Breasts	Milk production during pregnancy
	Adrenocorticotrophic hormone (ACTH)	Adrenal glands	
		1 Adrenal medulla	Secretion of adrenaline and noradrenaline
		2 Adrenal cortex	Secretion of adrenocorticoid hormones (or corticosteroids), e.g. cortisol and hydrocortisone (important in coping with stress) (see Chapter 12)
Posterior pituitary	**Oxytocin**	Uterus (womb)	Causes contractions during labour and milk release during breast feeding
	Vasopressin (also a neurotransmitter)	Blood vessels	Causes contraction of the muscle in the walls of the blood vessels and so raises blood pressure
	Antidiuretic hormone (ADH)	Kidneys	Regulates the amount of water passed in the urine

Other endocrine glands include:

(a) Thymus – situated in the chest; functions unknown, but thought to involve production of antibodies (see Chapter 12)

(b) Pancreas – secretes insulin (anti-diabetic hormone), given in the treatment of diabetes. Controls the body's ability to absorb glucose and fats

(c) Pineal body/gland – situated near corpus callosum, functions unknown but may play a role in sleep–waking cycle (see Chapter 7)

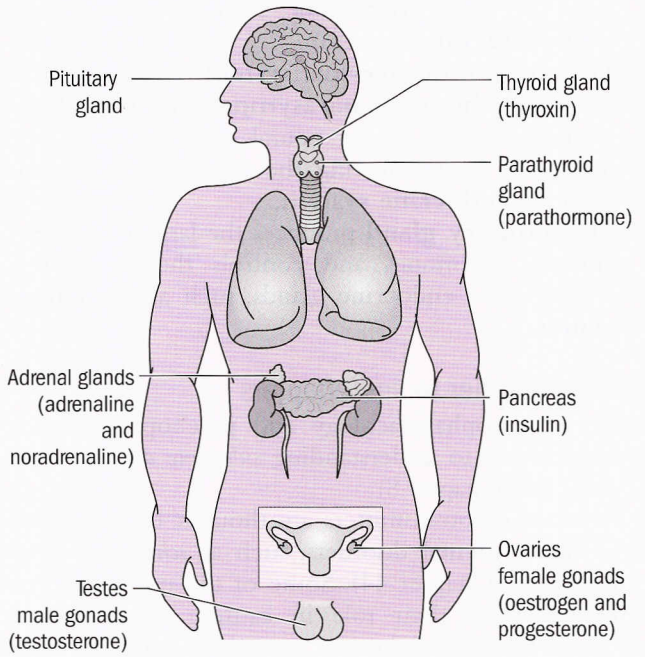


Figure 4.19 Some major glands of the endocrine system and the hormones they produce

CHAPTER SUMMARY

- **Biopsychology** is the branch of neuroscience that studies the biological bases of behaviour. Biopsychologists are only interested in biology for what it can tell them about behaviour and mental processes.
- The **nervous system (NS)** comprises 10–12 billion **neurons**, 80 per cent of which are found in the brain, mainly in the cerebral cortex. There are nine to ten times as many **glial cells**.
- Neurons are either **sensory/afferent**, **motor/efferent** or **interneurons/connector**. They vary enormously in length, but share a basic structure.
- A **nerve** is a bundle of **elongated axons**. Twelve pairs of **cranial nerves** leave the brain through holes in the skull, while 31 pairs of **spinal nerves** leave the spinal cord through the vertebrae. Together, they constitute the nerves of the **peripheral nervous system (PNS)**.
- When an **electrochemical signal/action potential** occurs, the inside of the neuron momentarily changes from negative to positive. The **resting potential** is almost immediately restored. Once the **threshold of response** has been exceeded, action potentials travel according to the **all-or-none rule**.
- **Synapses** are either **excitatory** or **inhibitory**, depending on the particular **neurotransmitter** contained within the **synaptic button**. Whether or not a particular neuron will fire depends on the combined effect of all its receiving synapses (**summation**). Once the transmitter molecules have crossed into the **post-synaptic membrane**, their effect is ended either by **deactivation** or **reuptake**.
- **Neuromodulators** 'prime' receiving neurons for later stimulation by a neurotransmitter. Neuromodulators include **neuropeptides**, in particular the **enkephalins** and **endorphins/opioids**.
- **Clinical/anatomical methods** of studying the brain involve patients who've suffered accidental brain damage or disease, or **split-brain** patients.
- **Invasive methods** involve **ablation**, **stimulating** the brain (either electrically or chemically), and **micro-electrode recording**.
- **Non-invasive methods** include the **electroencephalogram** (EEG), **electromyogram** (EMG), **electrooculogram** (EOG) and **average evoked potentials** (AEPs).
- Computers are also used in a number of **scanning/imaging devices**. These include **computerised axial tomography** (CAT), **positron emission tomography** (PET), **magnetic resonance imaging** (MRI), **single-photon emission computerised tomography** (SPECT), and **superconducting quantum imaging/interference device** (SQUID). These techniques provide access to processes associated with mental activity, inside the healthy living brain as they happen.
- The **cerebral hemispheres/cerebrum** enfold and conceal most other brain structures. The top layer is the highly convoluted **cortex**. Each hemisphere is naturally divided into the **occipital lobe** (which houses

the **visual cortex**), the **temporal lobe** (**auditory cortex**), the **parietal lobe** (**somatosensory/body-sense cortex**), and the **frontal lobe (motor cortex**).

- Highly sensitive parts of the body and those over which we have precise motor control have much more cortex devoted to them than other parts. The whole body is represented on the surface of the cortex as a 'body map' (**homunculus**).
- The **association cortex** is where higher mental processes 'occur', but as yet most have not been localised. The cortex isn't necessary for biological survival, which is controlled by various **subcortical** structures.
- The cerebral hemispheres are part of the **forebrain**, together with the **thalamus**, **hypothalamus**, **basal ganglia** and the **limbic system**.
- The **midbrain** is an extension of the brainstem and connects the forebrain to the spinal cord. The **reticular activating system** (RAS) begins in the spinal cord and passes through the brainstem.
- The **hindbrain** consists of the **medulla oblongata**, the **pons** and the **cerebellum**.
- The **spinal cord** is encased in the vertebrae and is the main communication cable between the CNS and the PNS. Messages enter and leave via 31 pairs of **spinal nerves**. At the junction with the cord itself, the nerve divides into the **dorsal root** (**sensory neurons**) and the **ventral root** (**motor neurons**).
- There's considerable evidence for both **functional localisation** and **functional lateralisation**. The left hemisphere is dominant for language in most right-handed people, but some people seem to have much more lateralised brains than others, while others display **bilateral representation**.
- Children's brains show considerable **plasticity**, which supports Lashley's **laws of mass action** and **equipotentiality**.
- The **phantom limb** phenomenon suggests that the adult brain is also very malleable, and there's some evidence of neurons being capable of regeneration.
- The findings from **split-brain studies** have led to the view that each hemisphere constitutes a separate mind or sphere of consciousness. An alternative interpretation is that the brain is organised in the form of **modules**, which work in parallel and often non-consciously. A third view is that the two hemispheres differ in their **processing styles**, yet represent a highly **integrated** system.
- The **autonomic nervous system** (ANS) comprises the **sympathetic** and **parasympathetic branches**. It works either by direct neural stimulation of body organs, or by stimulating the release of **hormones** from the **endocrine system**.
- The **pituitary gland** produces the largest number of different hormones and controls the secretion of several other endocrine glands, such as the **adrenal glands**.

Links with other topics/chapters

- Both neuropharmacology and psychopharmacology are relevant to understanding *substance dependence and abuse* (see Chapter 8).
- Several neurotransmitters are thought to be involved in major mental disorders, such as *schizophrenia* and *depression* (Chapter 44). Some of the most important evidence for their role in causing these disorders comes from what's known about how *drugs used to treat them* affect these neurotransmitters (Chapter 45).
- Some neuropeptides occur as hormones, including those that are involved *in emotional arousal* (Chapter 10), *stress reactions* (Chapter 12), and *sex drive* (Chapter 36).
- One of the ways the ANS produces its effects is by stimulating the release of hormones from the endocrine glands. The ANS is relevant to understanding *emotion* (Chapter 10) and *stress* (Chapter 12).
- Much of the *ethical controversy* surrounding the *use of non-human animals in experiments* focuses on the invasive methods used to study the brain (Chapter 48). These methods have been used in relation to *sensory processes* (Chapter 5), *eating* (Chapter 9), *stress* (Chapter 12), *pattern recognition* (Chapter 14) and *perceptual development* (Chapter 16).
- Non-invasive methods (in particular, the EEG, EMG and EOG) have been used extensively in relation to *sleep* (Chapter 7).
- Body image is one important component of the *self-concept* (Chapter 33).
- The study of split-brain patients raises fundamental issues regarding the *relationship between the brain and mind/consciousness* (Chapter 49).

The senses: providing the raw material of perception

Classifying sensory systems

Characteristics of sensory systems

Sensory thresholds

The visual system

The sense organ: the eye

Eye movements

Is the eye a camera?

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What do rods and cones do?

Rods, cones and adaptation

Rods, cones and ganglion cells

Ganglion cells and receptive fields

Visual pathways: from eye to brain

Hubel and Wiesel's studies of cortical cells

The extrastriate (prestriate) cortex

Synaesthesia

Colour vision and colour blindness

Theories of colour vision

The Young–Helmholtz trichromatic theory

The opponent process theory

Colour constancy

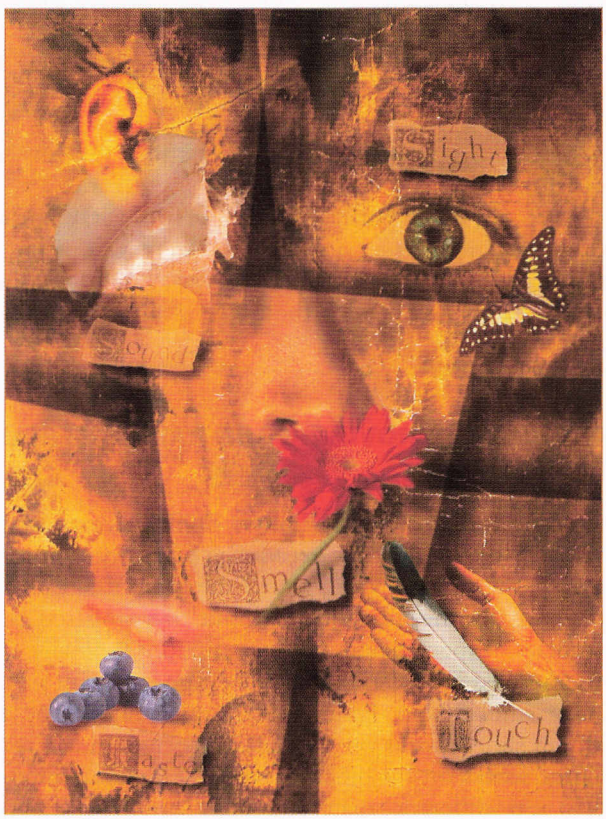
Retinex theory

Chapter summary

Links with other topics/chapters

5

SENSORY PROCESSES



INTRODUCTION AND OVERVIEW

When we move our eyes or our heads, the objects we see around us remain stable. Similarly, when we follow a moving object, we attribute the movement to the object and not to ourselves. When we walk towards someone in the street, we don't experience them as gradually growing 'before our eyes', and we recognise objects seen from various angles.

These examples of how we experience the world may seem mundane and obvious, until we realise what's actually taking place physically. If we compare what we experience (a world of objects that remain stable and constant) with what our sense organs receive in the form of physical stimulation (a world in an almost continuous state of flux), it's almost as if there were two entirely different worlds involved. The one we are aware of is a world of objects and people (*perception*), and the one we're not aware of is a world of sense data (*sensation*).

While perception cannot occur without sensation (the physical stimulation of the sense organs), the sense data constitute only the 'raw material' from which our awareness of objects is constructed. Although we feel we're in direct and immediate contact with the world as it really is, in fact our awareness of things is the end-product of a long and complex process. This begins with physical energy stimulating the sense organs (light in the case of vision, sound waves in the case of hearing), and ends with the brain interpreting the information received from the sense organs.

This chapter concentrates on sensation, the physical processes necessary for the psychological process of perception (see Chapters 15 and 16). However, when we talk about *vision*, for example, we're referring not just to the eyes, but to the whole *visual system*. The system also includes pathways between the eyes and the brain, as well as the brain itself.

THE SENSES: PROVIDING THE RAW MATERIAL OF PERCEPTION

According to Ornstein (1975), we don't perceive objective reality but, rather, our *construction* of reality. Our sense organs gather information, which the brain modifies and sorts, and this 'heavily filtered input' is compared with memories, expectancies, and so on, until, finally, our consciousness is constructed as a 'best guess' about reality.

In a similar vein, James (1902) maintained that 'the mind, in short, works on the data it receives much as the sculptor works on his block of stone'. However, different artists use different materials, and, similarly, different sensory systems provide different kinds of sense data for the perceiver-sculptor to 'model'. Each of our various sensory systems is designed to respond only to a particular kind of stimulation. But a related and equally important point (often overlooked) is that our sensory systems also function as *data reduction systems* (Ornstein, 1975).

If something cannot be sensed (because our senses aren't responsive or sensitive to it), *it doesn't exist for us*. While we normally regard our senses as the 'windows' to the world, a major job they perform is to discard 'irrelevant' information and to register only what's likely to be of practical value (clearly, something that has occurred as a result of evolutionary forces). We'd be overwhelmed if we responded to the world as it is: different forms of energy are so diverse they're still being discovered. Each species has developed particular sensitivity to certain of these different forms of energy, which have aided their survival. According to Bruce & Green (1990):

> Sensitivity to diffusing chemicals and to mechanical energy gives an animal considerable perceptual abilities but leaves it unable to obtain information rapidly about either its inanimate world or about silent animals at a distance from itself ... The form of energy that can provide these kinds of information is light, and consequently most animals have some ability to perceive their surroundings through vision ...

Box 5.1 The nature of light

- *Light* is one form of *electromagnetic radiation*, which includes radio waves, microwaves, infrared and ultraviolet light, as well as the visible spectrum.
- Although the entire spectrum ranges from less than 1 billionth of a metre to more than 100 metres, the human eye, by design, responds only to the tiny portion between 380 and 780 billionths of a metre (nanometres) which we call light. (Although pressure on the eyeball produces sensations of light, it's external sources of light that normally produce the sensation: see Figure 5.1.)

(Source: based on Bruce & Green, 1990)

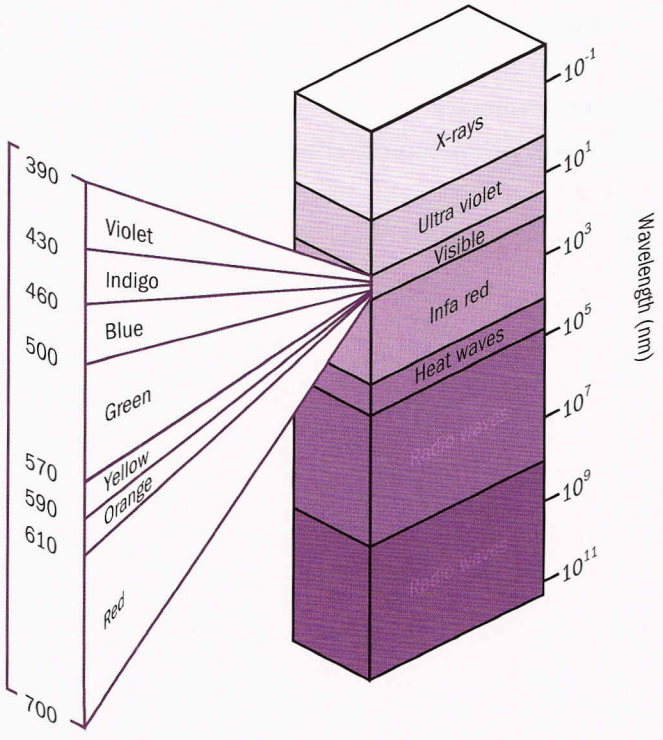


Figure 5.1 The spectrum of electromagnetic radiation. Wavelengths are given in nanometres (1 nm = 10^{-9} m). The visible part of the spectrum is shown on the left, with the colours of different wavelengths of light (redrawn from Bruce & Green, 1990)

CLASSIFYING SENSORY SYSTEMS

The senses have been classified in several ways. For example, Sherrington (1906) identified three kinds of receptor:

1. *exteroceptors*, which tell us about the external environment
2. *interoceptors*, which tell us about the internal environment
3. *proprioceptors*, which deal with the position of our body in space and its movement through space.

Exteroception includes the five 'traditional' senses of sight (*vision*), hearing (*audition*), smell (*olfaction*), taste (*gustation*) and touch (*cutaneous* or *skin senses*). Interoception includes the internal receptors for oxygen, carbon dioxide, blood glucose, and so on. Proprioception is usually sub-divided into: (i) the *kinaesthetic sense*, which monitors movements of the limbs, joints and muscles; and (ii) the *vestibular sense*, which responds to gravity and the movements of the head.

Gibson (1966) rejected proprioception as a distinct sensory system (and saw taste and smell as representing the same system), and Legge (1975) includes proprioception under the general heading of interoception.

CHARACTERISTICS OF SENSORY SYSTEMS

However we classify them, all sensory systems (or modalities) share certain characteristics.

- They each respond to particular forms of energy or information.
- They each have a *sense organ* (or *accessory structure*), which is the first 'point of entry' for the information that will be processed by the system (the sense organ 'catches' the information).
- They each have *sense receptors* (or *transducers*), specialised cells that are sensitive to particular kinds of energy, and which then convert it into electrical nerve impulses, the only form in which this physical energy can be dealt with by the brain (see Chapter 4).
- They each involve a *specialised part of the brain* that interprets the messages received from the sense receptors and (usually) results in perception of an object, a person, a word, a taste etc.
- A certain *minimum stimulation* of the sense receptors is necessary before any sensory experience will occur (the *absolute threshold*). In practice, instead of finding a single intensity value below which people never detect the stimulus and above which they always detect it, a range of values is found and the absolute threshold is taken to be the value at which the stimulus is detected 50 per cent of the time.

These characteristics for the six major sense modalities are described in Table 5.1.

Sensory thresholds

Not only does the absolute threshold vary from individual to individual, but it varies for the same individual at different times, depending on physical state, motivation, physical conditions of presentation, and so on.

The *difference threshold* is the minimum amount of stimulation necessary to discriminate between two stimuli, and is also known as the *just noticeable difference*

Table 5.1 Sense organs, sense receptors and brain areas for the six major sense modalities

Sense modality	Sense organ (accessory structure)	Sense receptor (transducer)	Brain area
Vision (sight)	Eye (in particular, the lens)	Rods and cones (in the retina)	Occipital lobe (striate cortex, extrastriate/prestriate cortex) (via optic nerve)
Audition (hearing)	Outer ear (pinna), middle ear (eardrum and ossicles), inner ear (cochlea)	Specialised hair cells in organ of Corti (in cochlea)	Temporal lobe (via auditory nerve)
Gustation (taste)	Tongue (in particular the taste buds and papillae, the ridges around the side of the tongue)	Specialised receptors in taste buds, which connect with sensory neurons	Temporal lobe (via gustatory nerve)
Olfaction (smell)	Nose (in particular the olfactory mucosa of nasal cavity)	Transducers in the olfactory mucosa	Temporal lobe and limbic system (via olfactory bulb and olfactory tracts)
Skin/cutaneous senses (touch)	Skin	There are about 5 million sensors, of at least 7 types, including: • Meissner's corpuscles (touch); • Krause end bulbs (cold)	Parietal lobe (somatosensory cortex) and cerebellum
Proprioception (kinaesthetic and vestibular senses)	Inner ear (semicircular canals, vestibular sacs)	Vestibular sensors (otoliths or 'earstones'), tiny crystals attached to hair cells in vestibular sacs which are sensitive to gravity	Cerebellum (via vestibular nerve)

(jnd). *Weber's law* states that the jnd is a constant value, but this, of course, will differ from one sense modality to another. For example, 1/133 is the value needed to tell apart the pitch of two different tones, and 1/5 for discriminating between saline solutions.

Box 5.2 Psychophysics and the Weber–Fechner law

- Fechner (1860) reformulated Weber's law and the Weber–Fechner law (as it's come to be known) states that large increases in the intensity of a stimulus produce smaller, proportional increases in the perceived intensity.
- Fechner's was one of the first attempts to express a psychological phenomenon mathematically, and was an important contribution to *psychophysics*. This studies the relationship between physical stimuli and how they're subjectively experienced.
- Psychophysics is of enormous historical importance in the development of psychology as a science (see Chapter 3).

The Weber–Fechner law holds only approximately through the middle ranges of stimulus intensities. An alternative approach is *signal detection theory*, which rejects the notion of thresholds altogether. Each sensory channel always carries *noise* (any activity that interferes with the detection of a signal): the stronger the stimulus, the higher the *signal-to-noise ratio* and the easier it is to detect the stimulus. The detection of a stimulus, therefore, then becomes a statistical matter (a question of *probabilities*).

THE VISUAL SYSTEM

The fundamental job of a single-chambered eye (such as the human eye) is to map the spatial pattern in the *optic array* onto the retina by forming an *image*. The optic array is the pattern of light reaching a point in space from all directions (Gibson, 1966: see Chapter 15). All light rays striking the eye from one point in space are brought to a focus at one point on the retina (Bruce & Green, 1990). *Visual acuity* is a way of describing the efficiency with which the eye does this. Pinel (1993) defines acuity as 'the ability to see the details of objects'. Acuity is limited by several processes, in particular:

- the efficiency with which the optical apparatus of the eye maps the spatial pattern of the optic array on to the retina
- the efficiency with which the receptor cells convert that pattern into a pattern of electrical activity
- the extent to which information available in the pattern of receptor cells activity is detected by the neural apparatus of the retina and the brain.

We'll now look at each of these aspects of acuity in turn.

The sense organ: the eye

ASK YOURSELF...

- Why do you think vision is considered to be the most important of the human sense modalities?

Ornstein (1975) describes the eye as 'the most important avenue of personal consciousness', and it's estimated that 80 per cent of the information we receive about the external world reaches us through vision (Dodwell, 1995). Research interest has focused largely on vision, both as a sensory system and a perceptual system. The sense organ of vision is the eye and its major structures are shown in Figure 5.2 (page 81).

The *conjunctiva* is a transparent, delicate membrane, covering the inside of the eyelids and the front of the eye. It contains nerves and many tiny blood vessels, which dilate (expand) if the eye is irritated or injured (the eye becomes bloodshot). The *cornea* is a transparent membrane, which protects the lens and through which light enters the eye.

Box 5.3 The pupil and the ANS

- The *pupil* (the hole in the iris) regulates the amount of light entering the eye via the iris (the coloured part of the eye), which has tiny sets of muscles that dilate and contract the pupil. (Pupil size is also regulated by the ciliary muscles.)
- In bright light, the pupil contracts to shut out some of the light rays; when light is dim or we're looking at distant objects, the pupils dilate to let more light in. *Sensitivity* rather than acuity is what's crucial.
- Ultimately, pupil size is controlled by the *autonomic nervous system* (ANS), and so is outside conscious control. The *parasympathetic branch* of the ANS controls change in pupil size as a function of change in illumination. The *sympathetic branch* dilates the pupils under conditions of strong emotional arousal, as in an 'emergency' situation when we need to see 'better' (see Chapters 9, 10 and 12).

The *lens*, situated just behind the iris, is enclosed in a capsule held firmly in place by the *suspensory ligaments*. It focuses light on the retina as an *inverted* (upside-down) image, and its shape is regulated by the ciliary muscles. As with certain reptiles, birds and other mammals, the lens of the human eye thickens and increases its curvature (and the ciliary muscles contract) when focusing on nearby objects. When viewing more distant objects, it becomes flatter (and the ciliary muscles are fully relaxed). This process is called *accommodation* (see Figure 5.3).

Between the cornea and the lens is the anterior chamber filled with *aqueous humour*, a clear, watery fluid, and behind the lens is the larger posterior chamber filled

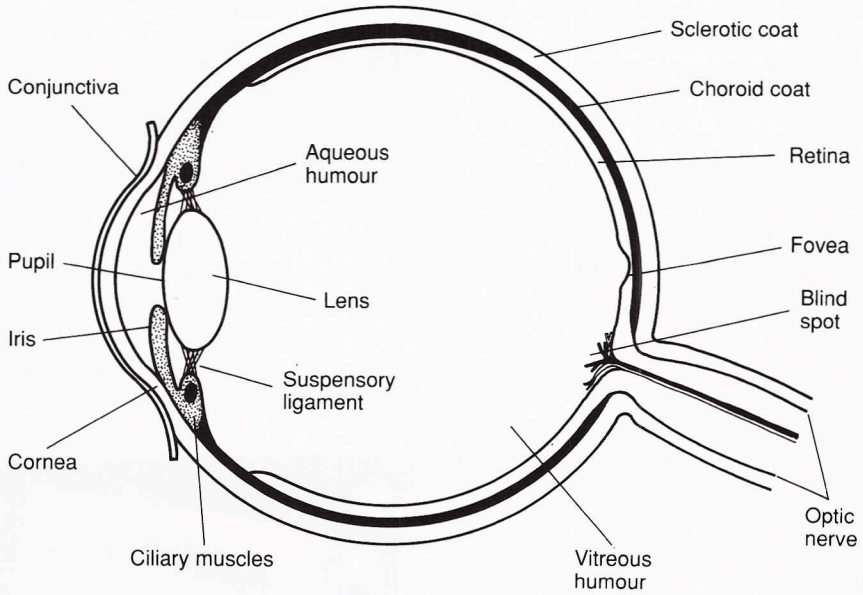


Figure 5.2 The major structures of the human eye

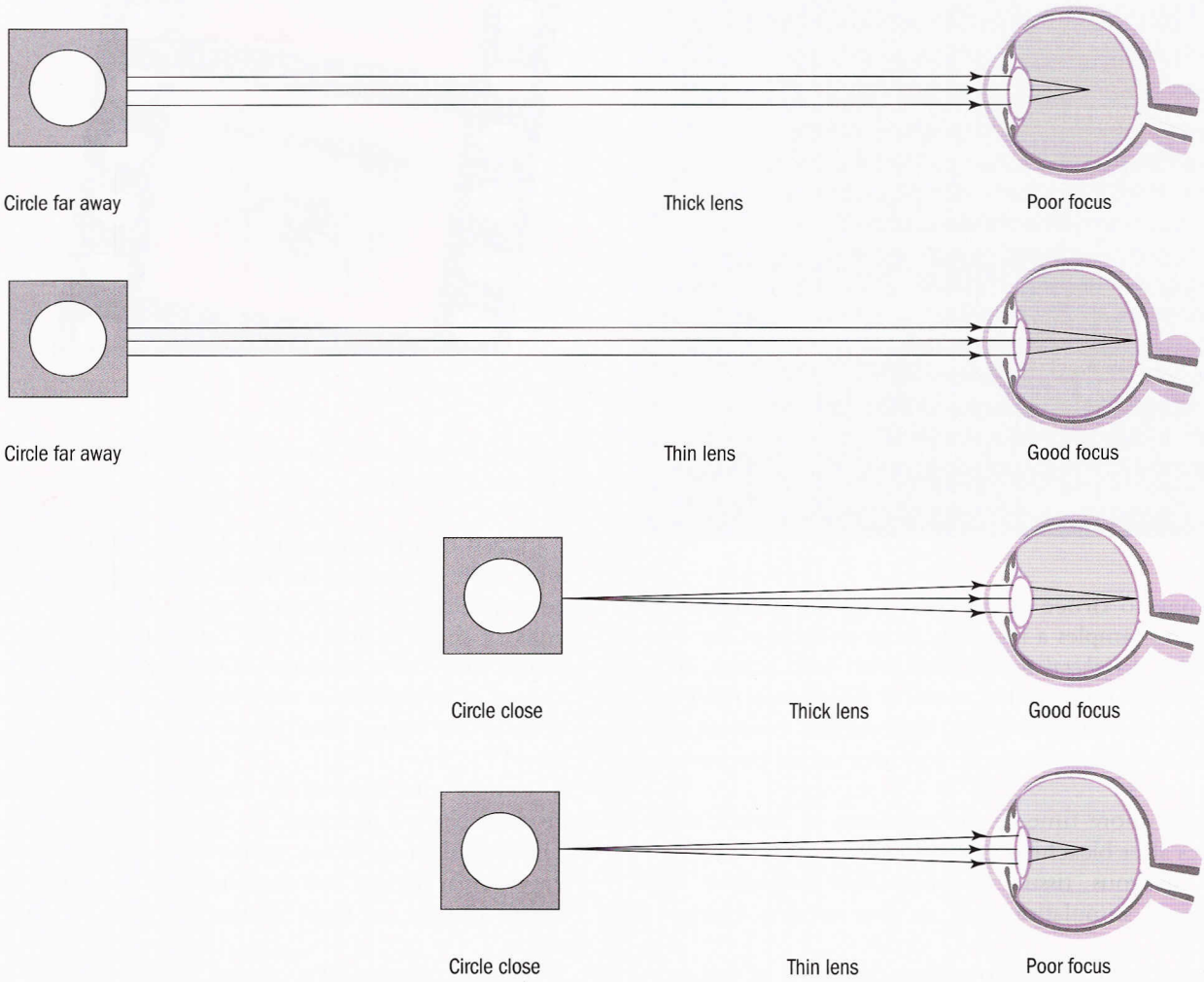


Figure 5.3 An illustration of accommodation
(from Matlin & Foley, *Sensation & Perception* 4th edition, Copyright © 1992 by Allyn & Bacon, Boston, MA. Copyright © 1992 by Pearson Education. Adapted by permission of the publisher.)

with *vitreous humour*, a jelly-like substance. Both fluids give the eyeball its shape and help to keep it firm.

The *sclerotic coat* is the thickest layer of the eyeball and forms the outer, white part of the eye. It consists of a strong, fibrous membrane, except in the front where it bulges to form the *cornea*. The *choroid coat* is a dark layer containing black-coloured matter, which darkens the chamber of the eye and prevents reflection of light inside the eye. In front, it becomes the iris, which is seen through the transparent cornea.

Eye movements

Primates' eyes make the largest, most rapid and most precisely controlled eye movements of all animals except the chameleon. The human eye is held in position by a dynamic balance between three pairs of antagonistic muscles, and instability in this balance produces a continuous, small-amplitude tremor, which means that the retinal image is in constant motion.

Box 5.4 Different types of eye movement

Sampling the optic array is achieved by three kinds of movement.

1. Sudden, intermittent jumps of eye position (*saccades*) occur while trying to fixate an object when looking directly at it (*foveal vision*). Even when we think we're looking steadily at something, or when we read or look at a picture, our eyes make several saccades each second to scan it.
2. Once an object has been fixated, smooth and continuous pursuit movements keep it in foveal vision as the object or the observer moves.
3. If the distance of the object from the observer changes, smooth and continuous *convergence movements* keep it fixated by the foveas of both eyes.

(Source: based on Bruce & Green, 1990)

According to Bruce & Green (1990), the human eye at any instant samples a relatively large portion of the optic array (the *peripheral visual field*) with low acuity, and a much smaller portion (the *central* or *foveal visual field*) with high acuity. Beaumont (1988) believes that constant alteration of the retinal image serves three useful purposes:

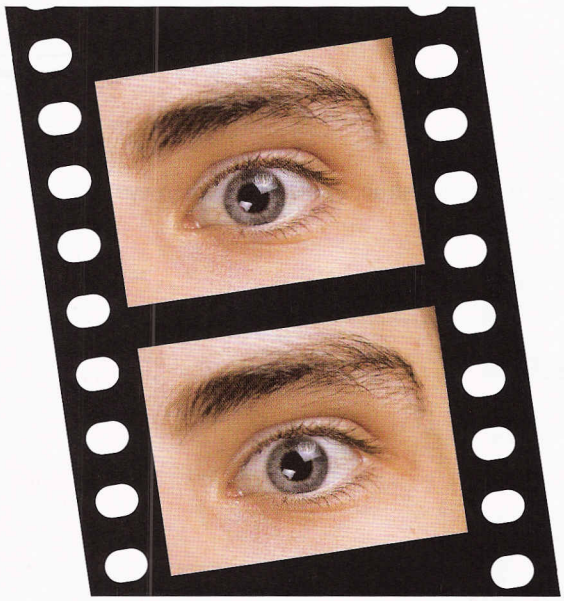
1. it gives more time to the pigments to replace themselves after bleaching (see below)
2. any nervous tissue becomes less responsive with repeated stimulation, and so also needs a chance to recover
3. it helps reduce the probability that parts of the retina will become obscured by blood vessels, by giving an opportunity for slightly different parts of the stimulus to be viewed by different sets of receptors.

Is the eye a camera?

ASK YOURSELF...

- In what ways can the eye be thought of as a camera?
- What are some of the major similarities and differences?

In a camera, light striking each light-sensitive grain in the film comes from a narrow segment of the optic array, and this is also true of the retinal image (Bruce & Green, 1990). Both also have a lens that projects the image on to the film or the retina. So the camera is a useful analogy for understanding the optics of the eye.



The eye as a camera?

However, Bruce and Green point out a number of important differences.

- If judged by the same standards as a camera, even the most sophisticated eye forms an image of an extremely poor quality. Optical aberrations produce blur, aberrations of the lens and cornea cause distortions in the image, and the curvature of the retina means that images of straight lines are curved and metrical relations in the image don't correspond to those in the world.
- A camera that moved as much as the eye would produce blurred pictures.
- The retinal image has a yellowish cast, particularly in the macular region, and contains shadows of the blood vessels that lie in front of the receptor cells in the retina.
- While the purpose of a camera is to produce a static picture for people to look at, the purpose of the eye and brain is to extract the information from the changing optic array needed to guide a person's

actions or to specify important objects or events. The optic nerve doesn't transmit a stream of pictures to the brain (as a TV camera does to a TV set), but instead transmits information about the pattern of light reaching the eyes. The brain then has to interpret that information.

The *retina* is the innermost layer of the eyeball, formed by the expansion of the optic nerve, which enters at the back and a little to the nasal side of the eye.

Box 5.5 The three layers of the retina

1. *Rods* and *cones*, photosensitive cells that convert light energy into electrical nerve impulses (and form the rear layer of the retina)
2. *Bipolar cells*, connected to the rods, cones and ganglion cells
3. *Ganglion cells*, whose fibres (axons) form the beginning of the optic nerve leading to the brain

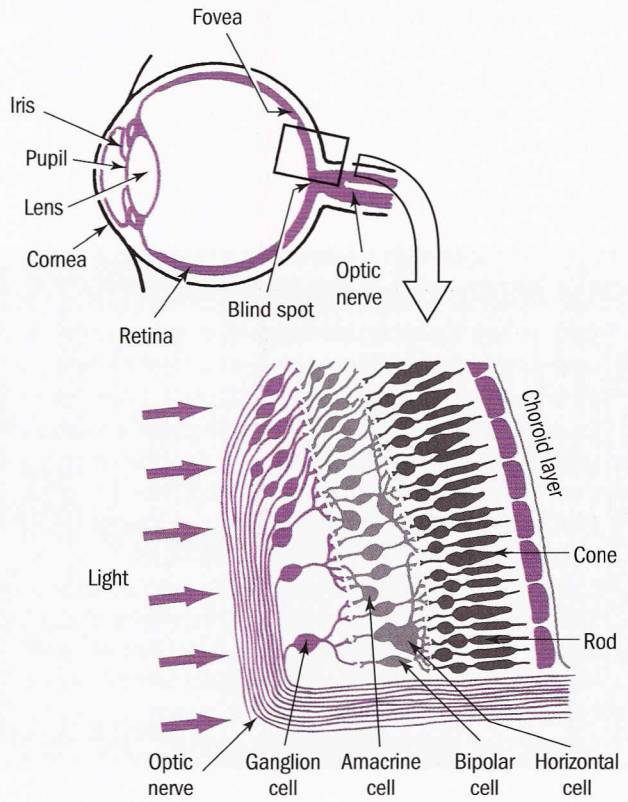


Figure 5.4 A diagrammatic section through the eye and a section through the retina at the edge of the blind spot (from Atkinson *et al.*, 1983)

The receptors: rods and cones

Gregory (1966) has estimated that only about 10 per cent of the light entering the eye actually reaches the transducers (rods and cones), the rest being absorbed by the accessory structures (the rest of the eye).

Box 5.6 The distribution of rods and cones

- The rods are 1000 times more sensitive than the cones – that is, they are far more likely to respond to *low levels* of illumination.
- They're also far more numerous: in each retina there are 120 million rods and 7 million cones.
- Their distribution around the retina also differs. Cones are much more numerous towards the *centre* of the retina. The *fovea*, a pit-like depression, is part of a cone-rich area (the *macula lutea*), where there's a concentration of about 50,000 cones. By contrast, the rods are distributed fairly evenly around the *periphery* (but aren't found in the fovea).

What do rods and cones do?

The *rods* are specialised for vision in dim light (including night-time vision) and contain a photosensitive chemical (*rhodopsin*), which changes structure in response to low levels of illumination. They help us see black, white and intermediate greys (*achromatic colour*), and this is referred to as *scotopic vision*. The *cones* are specialised for bright-light vision (including daylight) and contain *iodopsin*. They help us see *chromatic colour* (red, green, blue, and so on) and provide *photopic vision* (from 'photon', the smallest particle of light that travels in a straight line).

This chemical difference between the rods and cones explains the phenomenon of *dark adaptation*. If you go into a dark cinema from bright sunlight, you'll experience near blindness for a few seconds. This is because the rods need a little time to take over from the cones, which were responding outside. The rhodopsin in the rods is being regenerated (resynthesised), having been 'bleached' by the bright sunlight. It takes 30 minutes for the rods to reach their maximum level of responding.

Rods, cones and adaptation

Human vision, like that of most species, must be adapted to operate in a range of light intensities, and this is reflected in the structure of the retina. Rods have a deeper stack of pigment-filled layers of folded membrane in the outer segment than cones; this means that a photon passing through a rod is less likely to come out the other end, making rods far more sensitive than cones (see Box 5.6).

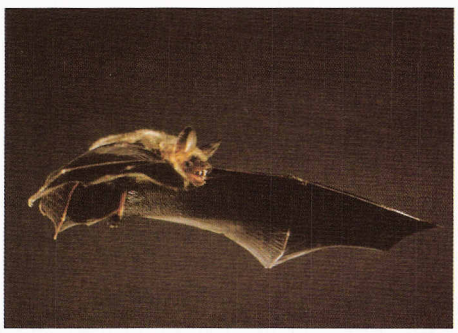
According to Bruce & Green (1990), this difference explains the correlation between the rod:cone ratio in an animal's retina and its ecology. *Diurnal animals* (which are active by day and sleep at night) have a higher *proportion of cones* than *nocturnals* (which are active by night and sleep by day: see Chapter 7). Pure-cone retinas are rare (mostly confined to lizards and snakes), as are pure-rod retinas (confined to bats and deep-sea fish, which never leave their dark habitats).

Box 5.7 What's the best way of looking at an object?

- When focusing on objects in bright light, the most sharply defined image is obtained by looking directly at them, thereby projecting the light on to the fovea (which, remember, is packed with cones).
- In night light, however, the sharpest image is actually produced by looking slightly to one side of the object (for example, a star in the sky), thereby stimulating the rods (which are found in the periphery of the retina).
- The dense packing of cones helps explain *acuity*: the more densely packed the receptors, the finer the details of a pattern of light intensity that can be transformed into differences in electrical activity. The difference between a human's acuity and, say, a falcon's is the result of a difference in receptor packing, with receptors being three times more densely packed in the falcon (Bruce & Green, 1990).



Dogs are diurnal and have relatively more cones than nocturnal animals, such as bats



Rods, cones and ganglion cells

The 127 million rods and cones are 'reduced' to 1 million ganglion cells, which make up the optic nerve. This means that information reaching the brain has already been 'refined' to some extent compared with the relatively 'raw' information received from other sensory nerves. However, the degree of reduction (or summation) differs considerably for different areas of the retina. In the *periphery*, up to 1200 rods may combine to form a single ganglion cell, and so connect to a single axon in the optic nerve. This provides only *very general visual information*. At the *fovea*, only 10–12 cones may be summed for each ganglion cell, providing *much more detailed information*.

Two other kinds of cell, *horizontal* and *amacrine*, interconnect with groups of the other cells and connect them together. This further increases the degree of information processing that takes place in the retina itself. Horizontal cells connect receptors and bipolar cells, while amacrine cells connect bipolar and ganglion cells.

Ganglion cells and receptive fields

Each ganglion cell has a *receptive field*, a (usually) roughly circular region of the retina, in which stimulation affects the ganglion cell's *firing rate*. There are (at least) three kinds of ganglion cell, each with a different kind of receptive field:

1. *on-centre cells* are more neurally active when light falls in the centre of the receptive field, but less active when it falls on the edge
2. *off-centre cells* work in the opposite way
3. *transient cells* have larger receptive fields and seem to respond to movements, especially sudden ones.

The combined activity of on-centre and off-centre cells provides a clear definition of *contours* ('edges'), where there is a sudden change in brightness. These contours are essential in defining the shape of objects to be perceived (Beaumont, 1988). Further analysis of contours takes place in the striate cortex by simple, complex and hypercomplex cells (see below).

Box 5.8 Is the retina back-to-front?

- As Beaumont (1988) points out, the retina appears to be built back-to-front: the receptors don't point to the source of the light but towards the supporting cells at the back of the eye. Before it arrives at the receptors, light must pass through the layers of retinal cells and blood vessels inside the eye (see Figure 5.4). In view of this, it's surprising that such high-quality vision can still be achieved.
- If you've ever looked directly at a flash of lightning, you may well have experienced a tree-like after-image, which is the shadows of the blood vessels thrown upon the retina. Or when you look up at the sky, especially a cloudless blue sky, you see small transparent bubbles floating in front of you: these are red blood cells.

Visual pathways: from eye to brain

As Figure 5.5 shows, the pathways from the half of each retina closest to the nose cross at the *optic chiasma* (or *chasm*) and travel to the *opposite hemisphere* (crossed pathways). The pathways from the half of each retina furthest from the nose (uncrossed pathways) travel to the hemisphere on the *same* side as the eye. So, when you fixate on a point straight ahead (such that the eyes converge), the image of an object to the *right* of fixation falls on the *left*

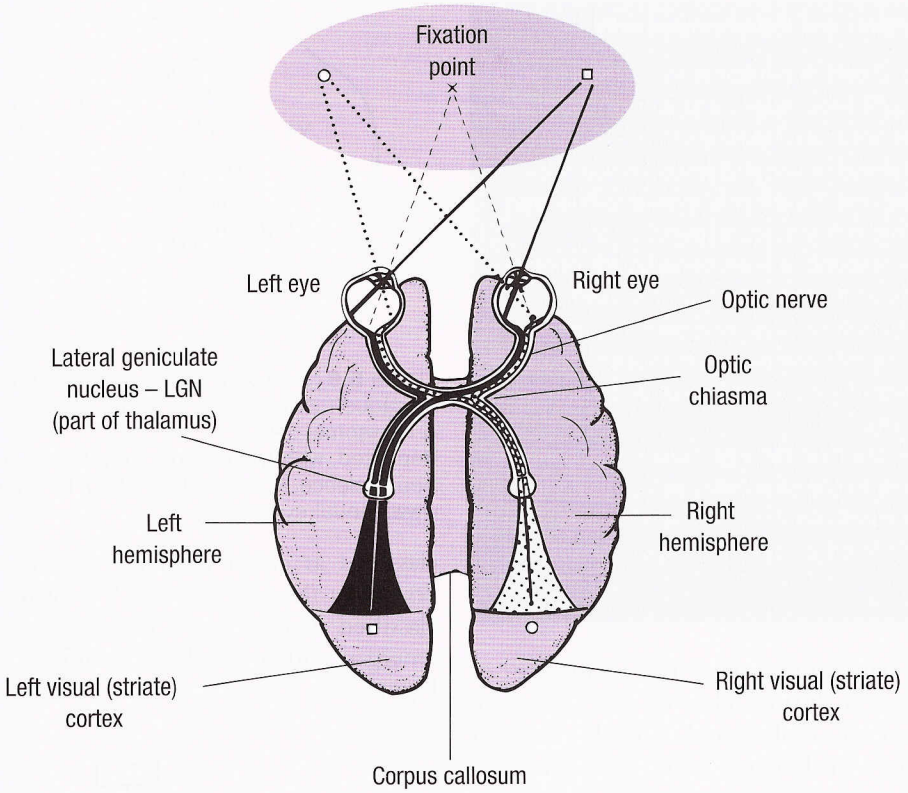


Figure 5.5 The visual system

half of each retina, and information about it passes along the *crossed pathway* from the right eye to the left hemisphere and along the *uncrossed pathway* from the left eye to the left hemisphere. No information is passed directly to the right hemisphere.

All these relationships are reversed for an object to the *left* of the fixation point, so that information is passed directly only to the *right* hemisphere. It follows that any damage to the visual area of just one hemisphere will produce blind areas in both eyes; however, the crossed pathway ensures that complete blindness in either eye won't occur.

Before reaching the cortex, the optic nerve travels through the *lateral geniculate nucleus* (LGN), which is part of the thalamus (see Chapter 4). Optic nerve fibres terminate at synapses with LGN cells arranged in layers (*laminae*), each lamina containing a *retino-optic map* of half the visual field.

LGN cells have concentric receptive fields similar to those of retinal ganglion cells, and the axons of LGN cells project to the *occipital lobe*. In monkeys, all LGN cells project to area 17, which is the *visual* or *striate cortex* (called the *geniculostriate path*).

CASE STUDY 5.1 D.B. and blindsight

- In humans, the *geniculostriate path* must be intact for conscious experience of vision to be possible. People with damage to their visual cortex will report complete blindness in part or all of the visual field. Even so, they'll show some ability to locate or even identify objects that they cannot consciously see; Weiskrantz (1986) called this *blindsight*.
- The most thoroughly investigated patient is D.B., who had an operation meant to reduce the number of severe migraines he suffered. Despite being left with an area of subjective blindness, he could detect whether or not a visual stimulus had been presented to the blind area and also identify its location. However, he seemed to possess only a rudimentary ability to discriminate shapes.
- This suggests that, while most visual functions rely on the 'primary' geniculostriate path, the 'secondary' *retinotectal path* (some ganglion cells are projected to the paired superior colliculi structures in the midbrain) carries enough information to guide some actions in an unconscious way. In the intact brain, these two paths function interdependently: the *corticotectal path* provides the superior colliculi with input from the cortex.

Hubel and Wiesel's studies of cortical cells

The first recordings from single cells in the striate cortex of cats and monkeys were made by Hubel & Wiesel (1959, 1962, 1968). They identified three kinds of cortical cell.

Box 5.9 Simple, complex and hypercomplex cells

- *Simple cells* respond only to particular features of a stimulus (such as straight lines, edges and slits) in particular orientations and in particular locations in the animal's visual field. For example, a bar presented vertically may cause a cell to 'fire', but if the bar is moved to one side or out of vertical, the cell will not respond.
- *Complex cells* also respond to lines of particular orientation, but location is no longer important. For example, a vertical line detector will respond wherever it is in the visual field. It seems that complex cells receive inputs from larger numbers of simple cells sharing the same orientation sensitivity.
- *Hypercomplex cells* are 'fed' by large numbers of complex cells and are similar to complex cells, except that they take length into account too (that is, they are most responsive to a bar or edge not extending beyond their receptive field).

Some researchers have questioned the existence of hypercomplex cells as a distinct class of cell (Bruce & Green, 1990). However, Hubel and Wiesel's research demonstrates that the visual cortex isn't a homogeneous mass of tissue, with randomly scattered cells of different kinds. Rather, it shows an astonishingly precise and regular arrangement of different cell types, which Hubel & Wiesel (1962) called the *functional architecture* of the visual cortex.

The six main layers of the striate cortex can be recognised under the microscope. The cortical area devoted to the central part of the visual field is proportionately larger than that devoted to the periphery. Hubel & Wiesel (1977) suggest that the cortex is divided into roughly square blocks of tissue (about 1 mm square), extending from the surface down to the white matter (*hypercolumns*).

The extrastriate (prestriate) cortex

Single-cell recordings have revealed many regions of the *extrastriate* (or *prestriate*) cortex, to the front of the striate, which can be considered 'visual areas'. However, it's proved more difficult to map these, compared with the striate cortex.

Maunsell & Newsome (1987) reviewed studies involving macaque monkeys. They concluded that there are 19 visual areas, covering large areas of the occipital, temporal and parietal lobes (see Figure 5.6). The deep folding of the cortex means that some areas, lying within folds (*sulci*), aren't visible from the exterior. This is why two important areas aren't shown in Figure 5.6, namely V3 (lying between V2 and V4) and the middle temporal area (MT: in front of V4).

Each area sends output to several others and most, if not all, connections are matched by reciprocal connections running in the opposite direction. Van Essen (1985) lists 92 pathways linking the visual areas. Most can be

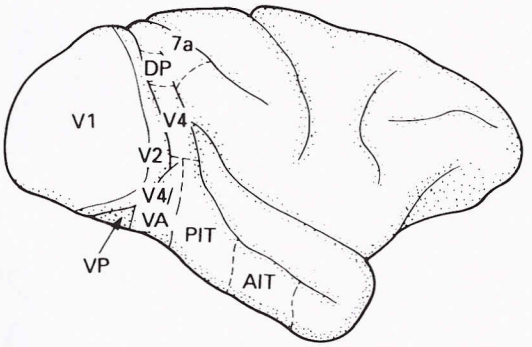


Figure 5.6 Side view of the right cerebral hemisphere of a macaque monkey. Area VI is the striate cortex (from Maunsell & Newsome, 1987)
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classified as either *ascending* (leading away from V1) or *descending* (leading towards V1). When the pathways are classified in this way, a consistently hierarchical pattern emerges, with areas placed at different levels (as shown in Figure 5.7).

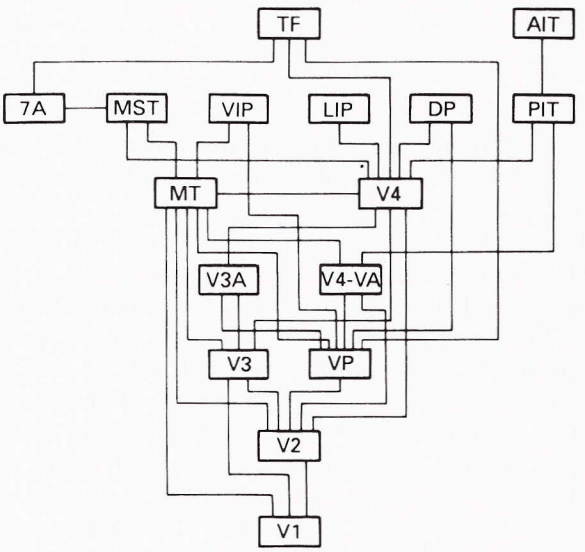


Figure 5.7 The hierarchical organisation of extrastriate visual areas in the macaque monkey as proposed by Maunsell and Newsome (from Maunsell & Newsome, 1987)
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The hierarchical processing of colour and number

According to Ramachandran & Hubbard (2003), neural signals from the retina initially travel to area 17 in the occipital lobe. The image is processed further within local clusters or blobs into such simple attributes as colour, motion, form and depth. The information about these separate features is then sent forward and distributed to several far-flung regions in the temporal and parietal lobes.

In the case of colour, information is sent to V4 in the fusiform gyrus of the temporal lobe. It's then passed to areas lying further up in the hierarchy of colour centres, including a region near a patch of cortex called TPO (standing for the junction of the temporal, parietal and occipital lobes). These areas may be concerned with more sophisticated aspects of colour processing, such as *colour constancy* (see below, pages 89–90).

Numerical computation also occurs in stages. An early step also occurs in the fusiform gyrus, where the actual shapes of numbers are represented. A later stage occurs in the angular gyrus, a part of the TPO concerned with numerical concepts such as ordinality (sequence) and cardinality (quantity).

The way in which colour and number are processed could help explain the fascinating phenomenon of *synaesthesia* (see below).

Does each area have its own specified function?

Zeki (1978) proposed a 'parcelling model', whereby the simple representation of the visual field in V1 and V2 is parcelled out to be analysed by a number of areas working in parallel. For example, V3 analyses form, V4 colour and V5 motion. However, Maunsell & Newsome (1987) and Van Essen (1985) believe that there might be two main pathways operating in parallel, one concerned with the analysis of motion and spatial layout, the other with colour, form and object recognition. Some of the evidence regarding processing of colour is discussed in the next section. Zeki himself later came to cast doubt on the parcelling model.

CASE STUDY 5.2 G.Y. and motion detection in the blind

- Zeki (1992, 1993) studied G.Y., a man blinded in an accident when he was seven.
- He could detect fast-moving objects, such as cars, and the direction they were travelling in.
- Scans confirmed that G.Y.'s V5 was active when he was 'seeing' fast motion, but his V1 wasn't.
- This suggests that fast movements are first processed by V5, while signals from *slow* movements arrive initially in V1. In Zeki's view, signals must go through V1 to see clearly, but even the blind can sometimes see through other areas in a rudimentary way.

The case of G.Y. still supports the view that different aspects of visual processing occur in different parts of the brain. This view is further supported by other examples of very specific visual impairments caused by brain damage. For example, V5 damage produces *akinetopsia*, in which moving objects appear invisible, even though the same objects can be seen quite clearly when stationary. Patients with *chromatopsia* (caused by widespread damage due to carbon monoxide poisoning) have intact colour vision, but almost all other visual abilities are impaired. Similarly, P.B. awoke from a four-month coma to find he was blind, *except* for the ability to make out colours (Zeki, cited in Highfield, 1999). The converse of this is *achromatopia*. Following a stroke, E.H. reported that everything looked grey, although all other visual abilities were normal. An MRI scan revealed damage to V4 (Shuren *et al.*, 1996).

Synaesthesia

ASK YOURSELF...

- Does it make sense to say that we can taste shapes, see sounds, or hear colours?
- Have you ever associated particular numbers with particular colours?
- Could the way that different kinds of visual information (colour, motion, form and depth) are processed help explain these phenomena (see above)

A small number of otherwise 'normal' people experience the ordinary world in extraordinary ways, and

> ... seem to inhabit a mysterious no-man's land between fantasy and reality. For them, the senses – touch, hearing, vision and smell – get mixed up instead of remaining separate. (Ramachandran & Hubbard, 2003)

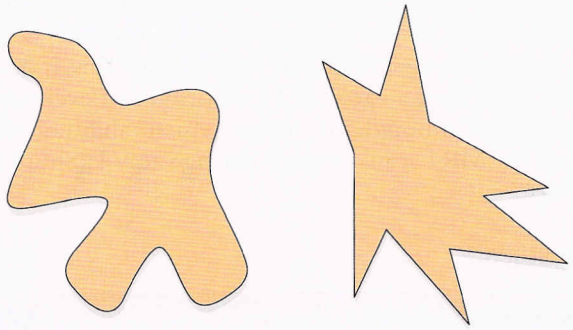
Examples include associating letters of the alphabet, or musical notes played on the piano, with colours, and numbers and shapes with tastes. *Synaesthesia* is commonly defined as a joining of the senses, where sensations in one modality (e.g. hearing) produce sensations in another (e.g. colour vision). But this is an oversimplification, because synaesthetic experiences are often driven by symbolic rather than sensory representations (as the examples above involving letters and numbers demonstrate) (Ward, 2003).

How does synaesthesia happen?

According to Ramachandran & Hubbard (2003), recent research has begun to uncover brain processes that could account for this phenomenon. One possibility is *cross-wiring*. As we noted earlier, both colours and numbers are initially processed in the fusiform gyrus, and subsequently near the angular gyrus. Number–colour synaesthesia might be caused by (a) cross-wiring between V4 and the number-appearance area (both located within the fusiform gyrus), or (b) between higher-colour areas and the number-concept area (both located within the TPO). The hearing centre in the temporal lobes is also close to the higher brain area that receives colour signals from V4. This could explain sound–colour synaesthesia.

ASK YOURSELF...

- Look at the figures on the next page.
- Which of these is a 'bouba' and which a 'kiki'?



Are we all 'closet synaesthetes'?

According to Ramachandran and Hubbard, 98 per cent of people pick the inkblot as 'bouba'. Why? Perhaps the gentle curves of the amoeba-like figure *metaphorically* mimic the gentle undulations of the sound 'bouba' as represented in the brain's hearing centres, as well as the gradual inflections of the lips as they produce the curved 'bouba' sound. The sharp inflection of the tongue on the palate when saying 'kiki' mimics the sudden changes in the jagged visual shape. People with damage to their angular gyrus fail to make the bouba/kiki distinction. Ramachandran and Hubbard suggest that the angular gyrus (which is disproportionately large in humans compared with apes and monkeys) evolved originally for cross-modal associations – but then was taken over for other, more abstract functions, such as metaphor. Significantly, synaesthetes are seven times more common among creative people, many of whom share the skill of using metaphor (in some form or another). It's as if their brains are set to make links between seemingly unrelated conceptual domains.

ASK YOURSELF...

- How does your perception of the world differ from mine?
- How could we possibly find out?

Box 5.10 Is 'my' red the same as 'your' red?

- According to Ward (2003), synaesthesia challenges the implicit assumption that other people's perceptual experiences of the world are the same as our own. This an age-old philosophical question, which many would say is insoluble.
- But according to Breslin (in Hollingham, 2004), a neuroscientist, 'No two people live in the same sensory world'. Recent genetic research has identified a huge number of genes involved in taste, smell, touch and vision.
- Not only are sensory genes vastly abundant, they are also highly variable. This means that individuals rarely have the same set of sensory genes – for smell, light sensitivity, pain perception – and colour perception (see the section on colour blindness, below).

COLOUR VISION AND COLOUR BLINDNESS

Light can be described physically by its *energy spectrum* (intensities at different wavelengths) or phenomenologically by three dimensions:

1. *brightness* (perceived intensity)
2. *hue* (perceived colour)
3. *saturation* (the purity of hue: how much colour or how much white).

Although both hue and saturation are aspects of 'colour', hue is what theories of colour vision and discussion of colour vision defects are concerned with.

As we've seen, cones are the photoreceptors responsible for chromatic vision, and rods and cones contain photosensitive pigments (which change their chemical constitution on exposure to light, namely rhodopsin and iodopsin, respectively).

Rushton & Campbell (1954, cited by Rushton, 1987) were the first to measure the visual pigments in the living human eye, applying the familiar observation that a cat's eye will reflect back light shone in its eye. Instead of the cat's shining *tapetum lucidium*, we have a very black surface behind the retina – the choroid coat – which reflects very faint light. Rushton and Campbell identified rhodopsin, plus red and green pigments. However, insufficient blue light is reflected to measure the blue cone pigment (Rushton, 1987).

Later, Marks *et al.* (1964, cited by Rushton, 1987) used fresh retinas from monkeys and human eyes removed during surgery to measure visual pigments in single cones. They found the blue-green and red-sensitive cones, thus supporting the Young–Helmholtz trichromatic theory (see below). Rushton and Campbell's findings were also confirmed using living colour-blind participants, who possessed only one of the two pigments they measured.

Theories of colour vision

The Young–Helmholtz trichromatic theory

The trichromatic theory (Young, 1801) claims that colour is mediated by three different kinds of cone, each responding to light from a different part of the visible spectrum. *Blue-sensitive*, *green-sensitive* and *red-sensitive* cones are maximally responsive to short, medium and long wavelengths, respectively. While the sum of the three wavelengths (B + G + R) determines brightness, their *ratio* or pattern (B:G:R) determines colour. This is essentially what is believed today (Rushton, 1987).

This explains the painter's experience that mixing a few paints will produce a whole range of colours. It also implies that every colour (including white) should excite B, G and R cones in a characteristic set of ratios, so that a mixture of red and green and blue lights, adjusted to produce this same set of ratios, should appear white or whatever the initial colour was. This was systematically

tested by Maxwell (1854), who found that every colour can be matched by a suitable mixture of blue, green and red 'primaries' (the *trichromacy of colour*). This was later confirmed by Helmholtz (Rushton, 1987). Hence, this is often called the *Young–Helmholtz trichromatic theory*.

The opponent process theory

While the Young–Helmholtz theory can explain the effects of mixing colours of different wavelengths, it has difficulty explaining *colour blindness* (see Box 5.11) and the phenomenon of *negative after-images*. Both of these can be explained more easily by the major alternative to the trichromatic theory, namely the opponent process (*tetrachromatic*) theory (Hering, 1878). This claims that colour analysis depends on the action of two types of detector, each having two modes of response. One signals red *or* green, the other signals yellow *or* blue. A third type of detector, black–white, contributes to the perception of brightness and saturation.

Evidence for the opponent process theory

- If you stare at a coloured surface (for example, red) and then look at a plain surface, you'll perceive an after-image that is coloured in the 'opposite direction' (i.e. green). This is called a *complementary* (or *negative*) after-image.
- The retina encodes in terms of three constituent components (a blue-green-red 'component' system: *stage one* of colour vision). But output through the bipolar and ganglion cells and on to the LGN (*stage two*) becomes re-coded in terms of opponent processes (DeValois & Jacobs, 1984). There seem to be *four* kinds of LGN cell: those that increase activity to red light but decrease with green (R+ G-); those that increase activity to green light but decrease with red (G+ R-); and similarly for blue and yellow (B+ Y-) and yellow and blue (Y+ B-). Still other LGN cells simply respond to black and white (Beaumont, 1988).

Box 5.11 Colour blindness

- People with defective colour vision (usually called '*colour-blind*') usually fail to distinguish between *red and green*. This is the most common form of defect, caused by a recessive sex-linked gene that affects more males (about 8 per cent) than females (about 0.4 per cent).
- Sufferers have *dichromatic* vision (normal vision is *trichromatic*): they possess only red- *or* green-sensitive cone pigments, but they can match every colour of the rainbow exactly with a suitable mix of only two coloured lights (for example, red and blue). Most people need the green primary as well if every colour is to be matched.
- Next most common is true colour-blindness, which involves an absence of any cones at all (*monochromatic vision*).
- Least common of all is *yellow-blue* blindness. These findings are clearly consistent with the opponent colour theory.
- Men's greater susceptibility to colour-blindness (of any kind) is due to their possessing only one X chromosome. Women possess two X chromosomes, so they carry the normal genes, plus (sometimes) one or more variant genes. This makes them potentially *tetrachromatic* ('super-sighted'), able to distinguish, for example, between two apparently identical shades of green (Hollingham, 2004).

Must we choose between the two theories?

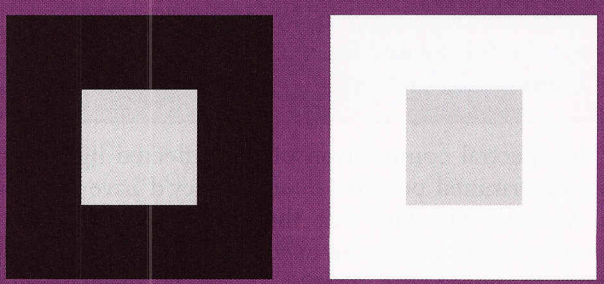
The generally held view is that a complete theory of colour vision must draw on elements from *both* theories. Indeed, Helmholtz himself showed that the two theories aren't incompatible, as a simple transformation could change the three receptor outputs to two different signals, plus one additive signal (Troscianko, 1987). According to Harris (1998), both theories are compatible, and neurophysiological evidence exists for both.

Colour constancy

Any chromatic light hitting the retina is composed of different amounts of the three primary colours (for example, turquoise might be 70 per cent blue, 30 per cent green). So, blue-sensitive cones would 'fire' quite quickly, and green-sensitive ones quite slowly (and red-sensitive wouldn't fire at all). However, perceived colour isn't solely determined by the wavelength composition of the light reflected from the object (the *spectral reflectance* of the object).

Box 5.12 Factors influencing the perception of colour

- The relative proportions of different wavelengths in the light falling on the object (the *spectral composition* of the illumination)
- Prior stimulation of the retina (as shown by complementary or negative after-images)
- The nature of the surroundings, such as the simultaneous contrast created by adjacent areas of different colour or brightness; for example, a grey square will look brighter set against a black background than against a white background)



- Our familiarity with, and knowledge of, an object's colour, which is part of the psychological phenomenon of *colour constancy*.

According to McCann (1987), our visual system is built to tell us about the permanent colours of objects, as opposed to the spectral composition of the light falling on a local area of the retina. Land (1977), the inventor of the Polaroid camera, provided a powerful demonstration of colour constancy.

KEY STUDY 5.1 Land's (1977) 'Mondrian' experiment

- Land used a *colour Mondrian*, a patchwork of different-coloured matt papers, randomly arranged so that each colour was surrounded by several others. The display was illuminated by mixed light from projectors with red, green and blue filters. Each projector also had an independent brightness control.
- Observers then selected one of the papers (for example, white) and Land measured the amounts of red, green and blue light coming from the white paper. They then selected a second paper (for example, red), and again the amounts of red, green and blue light were measured.
- Land then changed the illumination so that the red light from the red paper was exactly equal to the red light from the white paper (this required only a small change, since roughly equal amounts of red light are reflected from a red and a white paper). However, a substantial change was required to adjust the other projectors to produce exactly the same amounts of green and blue (much less green and blue are reflected from a red than a white paper).
- When all three projectors were switched on together, each observer reported 'red', despite the fact that the physical properties of the light from the red paper *were the same* as the light from the white paper.
- Using this method with other pairs of coloured papers, Land showed that almost the full range of colour sensations could be produced from a single mixture of red, green and blue light (thus supporting the trichromatic theory).

Retinex theory

ASK YOURSELF...

- If perceived colour were determined solely by the spectral composition of the reflected light, how would the first and second colours have been seen?
- Explain your answer.

If the spectral composition of the reflected light was all that determined perceived colour, they'd have been seen *as the same*. The fact that they *weren't*, means that the observers were displaying *colour constancy*. To explain this, Land proposed the *retinex theory of colour constancy* ('retinex' is a combination of 'retina' and 'cortex'). According to the theory, there are three separate visual systems or retinexes, responsive primarily to long-, medium- and short-wavelength light. Each produces a separate lightness image, and a comparison of these images is made. The comparison determines the colour that's perceived.

The three lightnesses provide the coordinates of a three-dimensional space. A colour space based on the *absolute* absorptions in the three classes of receptor predicts only whether two stimuli will *match*. But a space based on the three lightnesses predicts how colours actually *look*. This is because, between them, they give the reflectance of the object in different parts of the spectrum (that is, a measure of their *relative absorptions*). Land's theory implies that the formation of lightnesses could occur in the retina or cortex, and that the *retina-cortical structure* acts as a whole.

Cells with suitable properties for retinex theory exist in the LGN, and Zeki (1980) found that the response of individual cells in V4 of macaque monkeys mirrored his own perception of surface colour as opposed to the physical composition of the light. These V4 cells seem to be genuinely colour- (rather than wavelength-) selective (Harris, 1998).

CHAPTER SUMMARY

- **Sensation** is necessary for **perception**, since sense data represent the 'raw material' from which conscious awareness of the world is constructed.
- Each **sensory system** or **modality** is sensitive to a particular form of physical energy, but each also acts as a **data reduction system**. Being able to detect information rapidly about the inanimate world or other animals is very important for survival, which is why most species have evolved visual abilities.
- **Light** is one form of **electromagnetic radiation**. The human eye responds to only a tiny fraction of the visible electromagnetic spectrum.
- **Exteroceptors** include the five traditional senses of sight, hearing, smell, taste and touch; **interoceptors** include receptors for the internal environment; **proprioceptors** are usually sub-divided into the **kinaesthetic** and **vestibular senses**.
- Every sense modality comprises a **sense organ/accessory structure**, sense **receptors/transducers**, a **specialised brain area** that processes the sensory messages, and an **absolute threshold**.
- The **Weber–Fechner law** is an attempt to predict **difference threshold/jnd** and is an important part of **psychophysics**, which studies the relationship between physical stimuli and subjective experience.
- **Signal detection theory** rejects the notion of thresholds, and instead uses the concept of **signal-to-noise ratio**.
- The fundamental job of the human eye is to focus an image of the **optic array** on to the retina with maximum **acuity**. About 80 per cent of our information about the world comes through vision.

- The **pupil** regulates the amount of light entering the eye by contracting or dilating. Pupil size is controlled by the ciliary muscles and by the ANS.
- The **lens** focuses light on the retina as an inverted image, and its shape is regulated through **accommodation**. The retinal image is continuously moving, and other kinds of movement include **saccades**, **pursuit movements** and **convergence**.
- Although the camera is a useful analogy for understanding the optics of the eye, a particularly important **difference** is that what is sent to the brain is not a picture, but information about the pattern of light reaching the eyes. This information must then be interpreted.
- The **retina** contains 120 million **rods** and 7 million **cones**, the **photosensitive cells** that convert light energy into electrical nerve impulses. It also comprises **bipolar** and **ganglion cells**.
- The rods help us see **achromatic colour** (**scotopic vision**), and the cones help us see **chromatic colour** (**photopic vision**). When focusing on objects in bright light, the sharpest image is obtained by projecting the image on to the **fovea**, which is densely packed with cones.
- The rods and cones are 'reduced' to 1 million ganglion cells (**summation**) but this varies according to which part of the retina is involved. There are (at least) three kinds of ganglion cell, each with a different kind of **receptive field**.
- The pathways from the half of each retina closest to the nose cross at the **optic chiasma/chasm**, through the LGN, then on to the **visual/striate cortex** in the occipital lobe. This is called the **geniculostriate path**. Cases of **blindsight** suggest that the **retinotectal path** carries enough information to allow some 'unconscious' vision. Normally, these two paths work together.
- **Simple**, **complex** and **hypercomplex** cells in the striate cortex of cats and monkeys respond to particular stimulus features. These cells are arranged in **hypercolumns**.
- Research with monkeys has shown that large areas of the occipital, temporal and parietal lobes are involved in vision.
- **Synaesthesia** may result from the **cross-wiring** between parts of the brain that normally process different types of information separately.
- The **Young–Helmholtz trichromatic theory of colour vision** stresses the ratio or pattern of the three wavelengths of light, while the **opponent process/tetrachromatic theory** is based on the two modes of response of two types of detector.
- Some of the evidence supporting the opponent process theory comes from the study of **colour-blind** people. Both theories are seen as valid and complementary.
- According to **retinex theory**, perceived colour isn't solely determined by the wavelength of the light reflected from the object, but also by a number of other factors, including **colour constancy**.

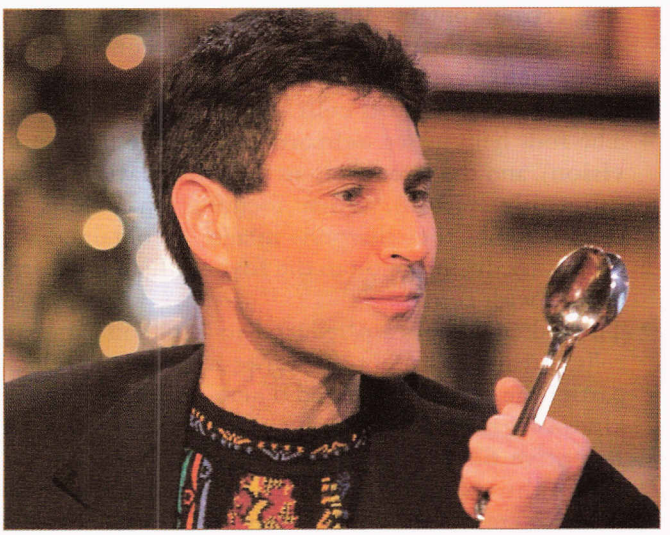
Links with other topics/chapters

- Sensation provides the 'raw material' for *perception* (Chapters 15 and 16).
- Sensory information is fed to the CNS via the SNS (part of the PNS). We've seen how sensory information is processed in various parts of the *brain*, and that 'vision' denotes the sense organ, sense receptor and specialised area of the brain working as a system (Chapter 4).
- Psychophysics was a significant development in psychology's emergence as a discipline in its own right (Chapters 1 and 3).

Parapsychology and science
The historical roots of parapsychology (PP)
Spiritualistic research/spiritualism
Psychical research
Modern PP
Varieties and definitions of parapsychological phenomena
Methods used to study psi
ESP and Zener cards
What were the Rhines' findings?
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6

PARAPSYCHOLOGY



INTRODUCTION AND OVERVIEW

For at least most psychologists, the sensory systems or modalities described in Chapter 5 are the only means by which we can acquire information about our environment (both physical objects and other people). However, there are some phenomena that seem to involve meaningful exchanges of information between organisms and their environment, and yet at the same time appear somehow to exceed the capacities of the sensory and motor systems as they are currently understood (Rao and Palmer, 1987). For these reasons, such phenomena are considered to be *anomalous*, and are commonly referred to as *paranormal* (or 'psi', short for 'psychic ability').

Such phenomena include 'extra-sensory perception' (ESP). The term unambiguously implies that there *are* ways of acquiring information about the world that *don't* depend on vision, hearing and so on. Similarly, psychokinesis (PK) refers to the influence of physical events by purely mental means. So, 'paranormal' is used for phenomena apparently lying outside the range of normal scientific explanations and investigations. However, most parapsychologists consider themselves to be scientists applying the usual rules of scientific enquiry to admittedly unusual phenomena. Indeed, the term 'parapsychology' was first introduced in the 1930s to refer to the scientific investigation of paranormal phenomena (Evans, 1987a).

PARAPSYCHOLOGY AND SCIENCE

ASK YOURSELF...
- How is it possible to believe in paranormal phenomena and be a scientist at the same time?

Perhaps the crucial phrase in the previous paragraph is 'apparently lying outside'. Parapsychologists who apply 'normal' scientific methods are following a long tradition of scientists who investigated phenomena that *at the time* seemed mysterious (Utts & Josephson, 1996) or were given what we'd now consider bizarre, 'unscientific', explanations. Gregory (1987a) gives the example of thunder and lightning:

> ... once considered to be the wrath of the Gods, but now understood as the same electricity that we generate and use for wonders of our technology.

In other words, 'paranormal' is a convenient label for certain aspects of human behaviour and experience that can be investigated scientifically and are subject to 'scientific' explanation. Once they've been accounted for scientifically, they'll no longer be called 'paranormal':

> ... Yet the phenomena of psi are so extraordinary and so similar to what are widely regarded as superstitions that some scientists declare psi to be an impossibility and reject the legitimacy of parapsychological inquiry ... (Atkinson *et al.*, 1990)

Sometimes, 'extraordinary' can be construed as 'not real', and the history of parapsychology is littered with accusations of fraud on the part of 'believers' by those who, for whatever reason, reject their claims. However, if psi 'really exists', what does this imply for many of our fundamental scientific beliefs about the world? While strong opposition to parapsychology is understandable, pre-judgements about the impossibility of psi are inappropriate in science. Many psychologists who are not yet convinced that psi has been demonstrated are nevertheless open to the *possibility* that new evidence may emerge that would be more compelling. Many parapsychologists believe that the case for psi has already been 'proven', or that experimental procedures exist that have the potential for doing so (Atkinson *et al.*, 1990).

We shall return to these issues later in the chapter (see pages 97–101).



Agents Mulder and Scully in a scene from *The X Files*. While Scully believes there is a 'scientific' explanation for everything, Mulder believes in the existence of other life-forms

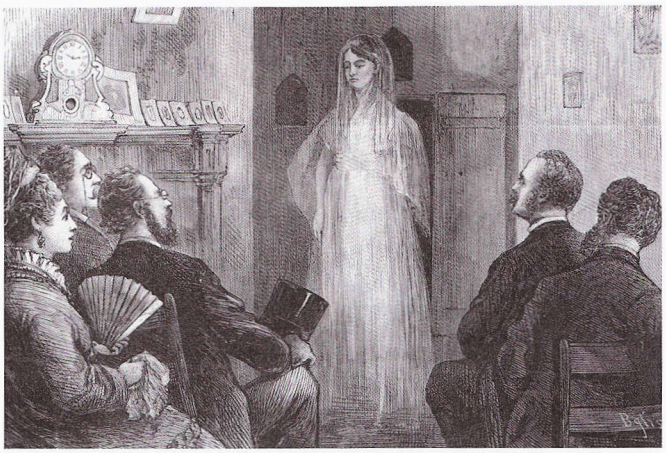
THE HISTORICAL ROOTS OF PARAPSYCHOLOGY (PP)

According to Evans (1987a), the history of PP can be conveniently divided into three overlapping phases or periods: *spiritualistic research/spiritualism*, *psychical research*, and *modern PP*.

Spiritualistic research/spiritualism

Most Victorian scientists brought up as orthodox Christians were expected to believe in the reality of an immortal, non-physical soul. So a substantial number of them became involved in the minority religion of *spiritualism*: if souls or spirits survived the death of the physical body, they must exist *somewhere* in the universe and should, in principle, be contactable (for example, through mediums). Some of the outstanding brains of the time, including physicists, biologists and anthropologists, solemnly tried to induce spirit forms to materialise in their laboratories. The Society for Psychical Research was founded in London in 1882 and, soon after, the *Journal of the Society for Psychical Research*.

Other, more critical or sceptical colleagues conducted their own experiments. Medium after medium was exposed as fraudulent, and the pioneers were shown to be gullible, incompetent, or both. By 1900, scientific interest was moving away from seances and towards 'more plausible' aspects of the paranormal.



In the heyday of spiritualism, mediums were tied up inside a 'cabinet' in front of an audience. In a deep trance, they claimed to exude ectoplasm from various bodily orifices, and so create fully-formed spirits that could move around the room, touching the astounded sitters (Blackmore, 2003)

Psychical research

This was the era of the 'ghost hunter'. Scientists and affluent amateurs turned to phenomena such as manifestations in haunted houses, poltergeist activity, demonic possession, apparitions and premonitions. There was also a growing number of casual studies of telepathy and precognitive dreams.

Modern PP

According to Blackmore (1995), a British parapsychologist, credit for the founding of PP (in the 1930s) was almost entirely due to J.B. Rhine and Louisa Rhine (although Louisa is often not mentioned, as in Evans', 1987a, account). They were biologists who wanted to find evidence against a purely materialist view of human nature. Despite sharing the same objectives, they wanted to dissociate themselves from spiritualism and bring their new science firmly into the laboratory. They renamed their research 'parapsychology', established a department of PP at Duke University in the USA, began to develop new experimental methods, and defined their terms operationally.

VARIETIES AND DEFINITIONS OF PARAPSYCHOLOGICAL PHENOMENA

ASK YOURSELF...

- What do you understand parapsychological/paranormal phenomena to be?
- Do you believe they exist as real phenomena (regardless of how you might explain them)?

J.B. Rhine introduced the term 'extrasensory perception' (ESP) in 1934. This was a general term used to cover three types of communication that supposedly occur without the use of the senses, namely *telepathy*, *clairvoyance* and *precognition*. These, and other commonly researched phenomena in PP, are defined in Box 6.1.

Box 6.1 The four types of psi

- **Telepathy:** '... the transmission of information from one mind to another, without the use of language, body movements, or any of the known senses ...' (Evans, 1987b). It was previously called 'thought transference'.
- **Clairvoyance:** '... the acquisition by a mind or brain of information which is not available to it by the known senses, and, most important, which is *not known at the time to any other mind or brain* ...' (Evans, 1987b).
- **Precognition:** '... the apparent ability to access information about future events before they happen ...' (Morris, 1989).

These are all forms of extrasensory perception (ESP). In all cases, the direction of influence is from environment to person.

- **Psychokinesis (PK):** '... the supposed power of the mind to manipulate matter at a distance without any known physical means ...' (Evans, 1987b), or the apparent ability to '... influence events simply by a direct volitional act of some sort, by wanting the event to happen in a certain way ...' (Morris, 1989).

For PK, the direction of influence is from person to environment (the reverse of ESP).

One consequence of definitions such as those in Box 6.1 is that the field of PP is ever-shrinking. For example, hypnosis, hallucinations, and lucid dreams used to be considered part of PP, until psychologists made progress in understanding them. As Boring (1966) said, a scientific success is a failure for psychical research; in other words, PP is concerned with those phenomena that 'mainstream' or 'regular' psychology cannot explain with its currently available models and theories (see above).

Other paranormal experiences which are increasingly becoming part of mainstream psychology are *near-death* and *out-of-body experiences*. The title of an article by Blackmore (1988) illustrates this 'shrinkage' of PP very well : '*Visions from the dying brain – Near-death experiences may tell us more about consciousness and the brain than about what lies beyond the grave*'. In it, Blackmore discusses near-death experiences and considers alternative explanations in terms of known or hypothesised *physiological processes*, in particular those relating to brain mechanisms. While seeing such experiences as deserving of serious study (they are real, powerful experiences), she rejects the claim that they are evidence of life-after-death (the occult/supernatural explanation). Instead, she argues that they should be understood in terms of brain function (neuropsychological explanations). Not only can we apply what we already know (about the brain) to these experiences, but they can also teach us much about the brain.



A representation of near-death experience (NDE) (© Liz Pyle, 1988)

METHODS USED TO STUDY PSI

According to Alcock (1981), definitions of ESP and PK are all negative, in the sense that they depend on ruling out 'normal' communication before the paranormal can be assumed. Progression in PP's experimental methods has necessarily been designed to exclude the 'normal' with even greater confidence. However, this inevitably leaves it open for critics to argue for even more devious ways in which sensory communication or outright fraud might occur (Blackmore, 1995).

ESP and Zener cards

The Rhines were convinced that the supposedly paranormal powers of the mind were essentially psychological phenomena, and so should be investigated with the tools of traditional psychological research. Throughout the 1930s, they conducted a lengthy series of *telepathy* experiments, in which a *receiver* had to guess the identity of a target being looked at by an *agent*. To make the task as easy as possible, a set of simple symbols was developed and made into *Zener cards* (named after their designer) or 'ESP cards'. They come as a pack of 25 cards, consisting of five circles, five squares, five crosses, five stars and five wavy lines.

The rationale for these studies was that they allowed the experimenter to compare the results achieved with what would be expected by chance. So, in a pack of 25 cards comprising five of each of five distinct symbols, we'd expect, on average, five to be *guessed* correctly (i.e. by chance alone). If receivers repeatedly scored above chance over long series of trials, this would suggest that they were 'receiving' some information about the cards. This would, in turn, imply that, if the experiments had been sufficiently tightly controlled as to exclude all normal or known sensory cues, then the information must be coming via ESP (Evans, 1987a). In *clairvoyance* experiments, the cards were randomised out of sight of anyone, and in *precognition* experiments, the card order was decided only *after* the receiver had made his/her guesses.

The order was determined initially by shuffling, and later by the use of random number tables. It's extremely important for targets in ESP experiments to be properly randomised, so that results cannot be affected by any kind of systematic biases: shuffling *isn't* adequate (Blackmore, 1995).

What were the Rhines' findings?

The technique seemed to be successful, and the Rhines reported results that were way beyond what could be expected by chance (Blackmore, 1995). They claimed that they'd established the existence of ESP. However, these claims produced considerable opposition from the psychological establishment.

For example, were the Rhines' receivers physically completely isolated from the experimenter, so that information couldn't be passed unwittingly (for example, by unconsciously whispering or other non-deliberate cues)? Were checks on the data records precise enough to ensure minor errors weren't made (unconsciously or deliberately) to bias the results in a pro-ESP direction?

The Rhines tightened up their procedures on both counts by (a) separating receiver and experimenter in different buildings, and (b) arranging independent verification and analysis of the results. As a consequence, the above-chance results became more rare, although they remained sufficiently common to constitute apparently indisputable evidence for ESP. However, then came another, more fundamental criticism. When psychologists not committed to a belief in ESP tried to replicate the Rhines' findings in their own laboratories, they simply failed to produce any positive results.

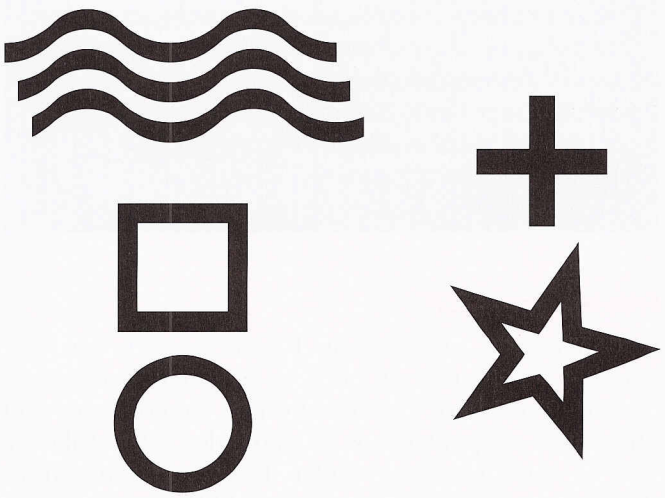


Figure 6.1 Zener card symbols

In response to this potentially fatal blow, the parapsychologists argued that a significant factor in ESP might be the *experimenter's attitude* to the phenomenon under investigation: sceptical or dismissive experimenters ('goats') might have a 'negative effect' on the results (the Rhines, and other believers, being 'sheep'). This argument seems to imply that only believers are fit to investigate ESP, which is contrary to the spirit of scientific research (Evans, 1987a: see Chapter 3). The director of research at the Duke University Laboratory (the Rhines themselves had retired) was later caught flagrantly modifying some experimental data in a pro-ESP direction. Fortunately, or unfortunately (depending on whether you're a goat or a sheep), this wasn't an isolated example. (We'll return to this issue later in the chapter: see Research Update 6.1, page 100.)

ASK YOURSELF...

- Are you a sheep or a goat?

Box 6.2 The problem of fraud

- According to Colman (1987), the history of PP is '... disfigured by numerous cases of fraud involving some of the most "highly respected scientists", their colleagues and participants ...'
- For example, Soal (Soal & Bateman, 1954), a mathematician at Queen Mary College, London, tried to replicate some of the Rhines' telepathy experiments using Zener cards. Despite his rigid controls and the involvement of other scientists as observers throughout, accusations of fraud resulted in a series of re-analyses of the data.
- Marwick, a member of the Society for Psychical Research in London, finally proved (in 1978) that Soal *had* cheated (Blackmore, 1995).
- Against this, it's misleading to suggest that experimenter fraud is rife in PP, or even that it's more common here than in other disciplines. According to Roe (personal communication), books such as *Betrayers of the Truth* (Broad & Wade, 1982) show that fraud is more likely when the rewards are high and the chances of being caught (publicly exposed) are low. This characterises mainstream science (especially medicine), and is certainly *not* characteristic of PP.

Free-response ESP

One drawback of the early Rhine research was that guessing long series of cards is extremely boring. By contrast, reports of psychic dreams, premonitions and other cases of spontaneous psi abounded. The challenge was to capture these under laboratory conditions (Blackmore, 1995). Free-response ESP represents the most important attempts to meet this challenge.

Remote viewing

Free-response methods include *remote viewing (RV) studies* (Targ & Puthoff, 1974, 1977). RV is a form of *clairvoyance*, in which an individual is able to 'see' a specific location some distance away, without receiving any information about it through the usual sensory channels. Targ and Puthoff reported a series of field studies involving Pat Price, a former California police commissioner, which sparked a debate between researchers as to whether Price's successes constituted genuine clairvoyance. Despite the controversy, the research was sufficiently convincing for the US military to fund a substantial research programme. The CIA declassified this information and released details of more than 20 years of RV research (Blackmore, 1996). RV has been put to practical use in 'psychic archaeology' (finding lost sites), criminal investigations (see Chapter 46) and, most controversially, predicting price fluctuations of silver futures on the stock market!

The Ganzfeld

The most successful free-response method has been the *Ganzfeld* ('ganz' = 'whole'; 'feld' = 'field'), first used for psi research by Honorton in 1974. He argued that why ESP occurs in dreams, meditation and reverie is that they're all states of reduced sensory input and increased internal attention. He tried to find a way of producing such a 'psi-conducive' state without the expense of a dream laboratory (see Chapter 7).

Box 6.3 The Ganzfeld

- Halved ping-pong balls are taped over the *receiver's* eyes, and red light is shone into them, so all that can be seen is a pinkish glow. Soothing sea sounds or hissing 'white noise' (like a radio that's not properly tuned in) are played through headphones while the participant lies on a comfortable couch or reclining chair. While this doesn't constitute total sensory deprivation (see Chapter 9), the Ganzfeld deprives receivers of patterned input and encourages internal imagery. They typically report a pleasant sensation of being immersed in a 'sea of light'.
- The *sender* (an experimenter acting as an agent) is situated in a separate, acoustically isolated room. A visual stimulus (a picture, slide or brief video sequence) is randomly selected from a large pool of similar stimuli to serve as the *target*. While the sender concentrates on the target (for about 15 minutes), the receiver tries to describe it by providing a continuous verbal report of his/her ongoing imagery and free associations.
- The sender stays in the room for another 10 minutes. From a separate room, the experimenter can both hear (via a microphone) and see (via a one-way mirror) the receiver, and is blind to the target (doesn't know what the target is).

- At the end of the experimental session, the receiver is presented with four stimuli (one of which is the target), and is asked to rate the degree to which each one matches the imagery and associations experienced during the session. A 'direct hit' is recorded if the receiver assigns the highest rating to the target.
- The sender is then called in and reveals the target. A typical experiment involves about 30 sessions.



A receiver in the Ganzfeld

The 'Ganzfeld debate'

Honorton (1985) analysed 28 studies using the Ganzfeld procedure (totalling 835 sessions, conducted in ten different laboratories). He reported a 38 per cent correct selection of the target, which compares with a 25 per cent success rate by chance alone (i.e. by guessing). Statistically, this is highly significant: the chances of obtaining a 38 per cent success rate by chance alone is less than one in a billion (Honorton, 1985).

However, a critical review by Hyman (in the *Journal of Parapsychology*, 1985) pointed out discrepancies in the scoring systems used, and procedural flaws (such as the failure to use proper randomisation for selecting the targets). Hyman also claimed to have found correlations between the quality ratings for studies and outcome, with the sloppier studies giving the 'better' results. However, in the same journal, Honorton claimed to have found *no* evidence of such a correlation. Rosenthal provided a commentary on the debate, generally regarded as favouring Honorton's interpretation (Blackmore, 1995).

Hyman & Honorton issued a joint 'communiqué' (Hyman and Honorton, 1986), in which they agreed that the studies as a whole fell short of ideal, but that something beyond selective reporting, or inflated significance levels, seemed to be producing the non-chance outcomes. They also agreed that the significant outcomes had been produced by several different researchers. Further replication would decide which of their interpretations was correct.

This debate, which Morris (1989) describes as 'an outstanding example of productive interaction between critic and researcher', brought parapsychologists and sceptics together to try to agree what would constitute an acceptable experiment. As a consequence, Honorton designed a *fully automated* Ganzfeld experiment, leaving little scope for human error or deliberate fraud. Several experiments produced significant results, which were published in the *Psychological Bulletin* in 1994. This is one of the world's most prestigious psychology journals, and meant that 'The Ganzfeld had achieved respectability' (Blackmore, 1997). However, despite many parapsychologists believing that the Ganzfeld is a genuinely repeatable experiment, most other scientists seem to reject the evidence:

> ... 'Unfair' say the parapsychologists. But we still do not know who is right. (Blackmore, 1997)

Clairvoyance vs telepathy

Some Ganzfeld experiments didn't use a sender, so that the target images could be acquired through *clairvoyance* (telepathy would require the involvement of another mind – the sender's). Honorton (1985) reported that where a sender was involved (*telepathy condition*), the results were generally more positive – but only when the experimenters were already experienced in using both sender and no-sender methods. Where experimenters consistently used one or other method, the *no-sender/clairvoyance condition* produced slightly more positive results.

SOME RECURRING ISSUES IN ESP RESEARCH

In our discussion of ESP research so far, we've seen just how divided opinion is between those who believe in the reality of ESP ('sheep') and those who don't ('goats'). We've also seen that accusations of fraud – the deliberate invention or modification of procedures or results – have been a feature of the history of PP research. Arguably, this makes the study of psi unique as an area of psychological enquiry. At least as far as goats are concerned, parapsychologists are guilty unless proven innocent. In other words, if psi doesn't exist (as goats maintain), then any claims by sheep that it does must be based on fraudulent (or, at best, unreliable and/or invalid) data. So, rather than simply trying to produce evidence that supports the existence of psi, parapsychologists are constantly having to show that they are *not cheating*! But how can you prove a negative?

The history of PP also seems to highlight a number of methodological issues that, while they recur throughout

all areas of psychological research, assume a more exaggerated or extreme form in relation to psi. These include:

- the question of *the 'conclusive' experiment*
- the *replication problem*
- *publication bias* (or the *file-drawer problem*)
- the *inadequacy of controls*
- *experimenter effects*.

The question of the 'conclusive' experiment

According to Abelson (1978), then editor of *Science*, 'extraordinary claims require extraordinary evidence' (quoted in Rao & Palmer, 1987). This implies that the strength of evidence needed to establish a new phenomenon is directly proportional to how incompatible the phenomenon is with our current beliefs about the world. If we reject the possibility of this new phenomenon (its *subjective probability* is zero), then no amount of empirical evidence will be sufficient to establish the claim. However, as Rao and Palmer point out:

> ... In serious scientific discourse ... few would be expected to take a zero-probability stance because such a stance could be seen to be sheer dogmatism, and the very antithesis of the basic assumption of science's open-endedness.

Abelson's 'extraordinary evidence' sometimes means, in practice, demands for a 'foolproof' experiment that would control for all conceivable kinds of error, including experimenter fraud. This assumes that at any given time, one can identify all possible sources of error and how to control for them (see Chapter 3).

ASK YOURSELF...

- Is this assumption valid? (See Box 3.7, page 47.)

According to Rao & Palmer (1987):

> ... The concept of a 'conclusive' experiment, totally free of any possible error or fraud and immune to all skeptical doubt, is a practical impossibility for empirical phenomena. In reality, evidence in science is a matter of degree ... a 'conclusive' experiment [should] be defined more modestly as one in which it is highly *improbable* that the result is artifactual ...

In other words, there are *no absolutes* in science (no certainty, no once-and-for-all 'proof'), only *probabilities* (see Chapter 3). In *this* sense, Rao and Palmer believe that a case can be made for 'conclusive' experiments in PP.

Box 6.4 Schmidt's (1969) random event generator (REG)

- Schmidt, a physicist at the Boeing Scientific Research Laboratories in the USA, designed a test for the possibility of ESP.
- A specially built machine seemed to rule out all artefacts arising from recording errors, sensory cues or receiver cheating. The machine randomly selected targets with equal probability, and recorded both target selections and receivers' responses. The receiver's task was to guess which of four lamps would light and press the corresponding button if aiming for high scores (or avoid pressing if aiming for low scores).
- Random lighting of the lamps was achieved by a sophisticated electronic *random event generator* (REG), which was tested extensively in control trials and found not to deviate significantly from chance.

The REG experiments:

- represent one of the major experimental paradigms in contemporary PP
- are regarded by most parapsychologists as providing good evidence for psi
- have been subjected to detailed scrutiny by critics.

Despite this, and almost inevitably, they have been criticised. For example, Hansel (1980) claimed that Schmidt's highly significant results haven't been replicated by other researchers (see below), and these criticisms are routinely taken as valid by most sceptics (such as Alcock, 1981). Although Hyman (1981, cited in Rao & Palmer, 1987) is one of the few psi goats who has questioned Hansel's basic reasoning, he still agrees with Hansel's claim that the REG experiments don't provide an adequate case for the existence of psi. However:

> There is no such thing as an experiment immune from trickery ... Even if one assembles all the world's magicians and scientists and puts them to the task of designing a fraud-proof experiment, it cannot be done. (Rao & Palmer, 1987)

The replication problem

Rao & Palmer (1987) argue that science is concerned with establishing general laws, not unique events (this relates to the *idiographic–nomothetic debate*: see Chapter 42). The ability to repeat an experiment would seem to be a reasonable thing to demand of a field aiming to achieve scientific respectability (*New Scientist*, 2004: see Chapter 3).

However, many sceptics argue that only 'replication on demand' can produce conclusive proof of psi. According to Rao and Palmer, an experiment isn't either replicable or not replicable, but rather it's on a continuum:

> ... In this sense of statistical replication, an experiment or an effect may be considered replicated if a series of replication attempts provides statistically significant evidence for the original effect when analysed as a series. (Rao & Palmer, 1987)

In other words, does the evidence *overall* support the existence of the effect being investigated? On *balance*, does the accumulated evidence, based on a large number of replication attempts, point towards the existence of psi, or

not? But while this is fine in principle, in practice it's proved impossible to reach any kind of consensus.

Between 1995 and 1999, 30 Ganzfeld experiments were conducted. Four different *meta-analytic* studies of these experiments were also performed. (A meta-analysis (MA) is a 'study of studies' using a statistical technique that allows diverse studies to be compared on a single measure, called an *averaged effect size*: see Box 45.10, page 830). Two of these MAs concluded that the findings were significant, while the other two concluded that they weren't! The biggest discrepancy between them was the inclusion (or not) of a hugely successful study by Dalton (1997) carried out at Edinburgh University. It was omitted from two of the MAs on the grounds that it was an 'outlier': because its results were so much better than any others, it should be discounted (an accepted practice in MA). But another accepted practice is that MAs must use *all* available data. So, the other two included Dalton's study (*New Scientist*, 2004). So much for scientific objectivity!

Rao & Palmer (1987) argue that, once we give up the idea of *absolute* replication ('replication on demand'), parapsychological phenomena have been replicated in a statistically significant sense. Also, many parapsychologists argue that any failure to replicate should be taken as a *positive* result: it confirms what they knew all along, namely that paranormal phenomena are inherently elusive. You cannot expect to pin them down in the laboratory (*New Scientist*, 2004).

Publication bias (or the 'file-drawer' problem)

The so-called *file-drawer problem* refers to the claim that non-significant results may systematically go unreported: if a study fails to find evidence of psi, it's 'consigned to the filing-cabinet drawer', so that no one except the researchers who conducted the study know of its existence. This would mean that those that are published (the database of known studies) may not accurately reflect the true state of affairs: there will be a strong bias in favour of psi.

According to Rao & Palmer (1987), close scrutiny of the field suggests that the file-drawer problem cannot explain away the significant number of replications in PP. But isn't it impossible ever to establish how many studies may have been 'binned'?

Box 6.5 Solving the file-drawer problem

- Parapsychologists are more sensitive to the possible impact of unreported negative results than most other scientists. In the USA, the Parapsychological Association (PA) has advocated publishing all methodologically sound experiments, regardless of the outcome. Since 1976, this policy has been reflected in publications of all affiliated journals (such as the *Journal of Parapsychology*) and in papers accepted for presentation at annual PA conventions.
- There are relatively few parapsychologists, and most are aware of ongoing work in the various laboratories around the world. When conducting an MA, parapsychologists actively seek out unpublished negative studies at conventions and through personal networks.
- A technique developed by Rosenthal (1979, cited in Rao & Palmer, 1987) makes it possible to estimate the number of unpublished, non-significant experiments that would be necessary to reduce an entire database to non-significance. For example, Honorton (1985) estimated that 423 non-significant Ganzfeld studies would be needed to reduce the direct-hit studies to a non-significant level (the equivalent of 12,000 sessions: see Box 6.3).

  ... Given the complex and time-consuming nature of the ganzfeld procedure, it is unreasonable to suppose that so many experiments exist in the 'file drawer'... (Rao & Palmer, 1987)

- There are also some areas where we can be reasonably certain we have access to *all* the experiments conducted – for example, research into the relationship between ESP performance and ratings obtained on the Defence Mechanism Test (DMT: Kragh & Smith, 1970, cited in Rao & Palmer, 1987). Because the administration and scoring of the test requires specialised training available to only a few individuals, Johnson (at the University of Utrecht and a leading authority on DMT) has been able to keep track of the relevant experiments, conducted by qualified people. In all ten experiments identified by Johnson & Haraldsson (1984, cited in Rao & Palmer, 1987), the less defensive participants scored higher on ESP tests, seven studies proving significant at the 0.05 level.

(Source: based on Atkinson *et al.*, 1990; Rao & Palmer, 1987)

The inadequacy of controls

According to Alcock (1981), replication of an experimental result by other experimenters:

> ... does not assure that experimental artifacts were not responsible for the results in the replication as well as in the original experiment.

This is perhaps like saying that 'two wrongs don't make a right'. While it's true that replicating an effect implies nothing directly about its cause, it's also a basic premise of experimental science that replication reduces the probability of *some* causal explanations, particularly those related to the honesty or competence of individual experimenters (Rao & Palmer, 1987). As Alcock (1981) himself says in another context:

> It is not enough for a researcher to report his observations with respect to a phenomenon; he could be mistaken, or even dishonest. But if other people, using his methodology, can independently produce the same results, it is much more likely that error and dishonesty are not responsible for them.

Some more specific criticisms of ESP research relating to inadequacy of controls were discussed in the sections on 'Methods used to study psi', above (see pages 95–97).

Experimenter effects

Alcock (1981) and others have argued that replications must be conducted by investigators *unsympathetic to psi* (goats). This would exclude most – but not all – parapsychologists (Blackmore being a good example of one who would 'qualify'). Researchers' personal beliefs are rarely reported and may often be difficult to determine reliably. Rao & Palmer (1987) believe that if such a criterion were to be applied retrospectively to published research in psychology as a whole, there wouldn't be much left. Why should parapsychologists be singled out in this way, and why have critics not suggested that negative results from 'disbelievers' in psi also be rejected? It's impossible to know how many 'disbelievers' have obtained positive results, nor can we assume that such results would necessarily be acknowledged as such.

However, one of the most consistent findings in parapsychological research is that some experimenters, using well-controlled methods, repeatedly produce significant results, while others, using exactly the same methods, consistently produce non-significant results. As we saw in Chapter 3 (Box 3.6, page 45), experimenters can affect the outcome of experiments unwittingly, through tone of voice and other forms of bodily communication, which can subtly (and unconsciously) convey expectations to the participants. These *experimenter effects* have long been explicitly recognised and discussed in PP.

Box 6.6 Psi-permissive, psi-inhibitory and psi-conducive experimenters

- Some experimenters seem capable of creating a climate in which participants' psi abilities are allowed to express themselves (*psi-permissive* experimenters), while others have the opposite effect and produce consistently negative results (*psi-inhibitory* results). These differences seem to be related to:
  - (i) the pleasantness/unpleasantness of the experimental setting for the participant – a relaxed participant is more likely to display psi abilities (Crandall, 1985)
  - (ii) the experimenter's expectations – participants are more likely to display psi abilities if the experimenter expects positive results (Taddonio, 1976).
- According to Schmiedler (1997), some experimenters have produced particularly high levels of positive results with participants who fail to repeat their performance later. This could be explained in terms of a highly motivated experimenter, who has strong psi abilities him/herself. S/he may somehow *transfer* these abilities to participants during the course of the experiments (but not beyond). These are referred to as *psi-conducive* experimenters. This transfer can distort the experimental findings.

How should we interpret these findings?

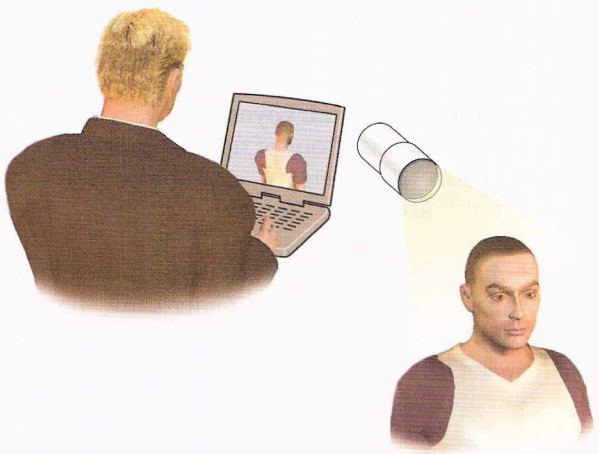
The experimenter effect (EE) is one of parapsychology's longest-standing controversies. This is largely due to the 'heads I win, tails you lose' interpretation that many parapsychologists (sheep) place on the findings described in Box 6.6. In other words, the fact that positive results are obtained by researchers with psi abilities – but not by those without – 'proves' that psi exists. Rather than being a confounding variable as sceptics would claim (see Chapter 3), believers argue that experimenter effects in the context of parapsychological research actually demonstrate the phenomena under investigation.

According to Palmer, of the Rhine Research Centre (in McCrone, 2004), 'the strongest predictor of ESP results generally is the identity of the experimenter'. The EE itself is now the object of intense research. New explanations for it are also emerging. For example, some parapsychologists claim that it arises not through experimenters' influence over mind or matter, but because they use their extra-sensory powers to pick the right moments to sample a fluctuating process and catch any 'fluky', but natural, departures from randomness (McCrone, 2004).

RESEARCH UPDATE 6.1: Investigating the experimenter effect

- Ongoing research into the experimenter effect is being conducted jointly by Wiseman (University of Hertfordshire, UK) and Schlitz (Institute of Noetic Sciences, California, USA). This is a classic sceptic (Wiseman) versus believer (Schlitz) experiment.
- The experiment is an example of *Direct Mental Interaction with Living Systems* (DMILS) – that is, attempts to use mental connection to influence distant biological systems. This can take the form of remote staring (as in the Wiseman–Schlitz research), and affecting the growth rates of seedlings and yeast cultures.
- Participants sit in an isolated room, hooked up to electrodes that measure arousal levels through slight changes in sweating of the hands (galvanic skin response/GSR: see Chapter 4).
- In another room, the experimenter can see the participant on CCTV.
- The experimenter has either to stare at the participant or look away, according to a random 16-minute schedule divided into 30-second blocks.
- The hypothesis being tested is that if participants know they're being stared at, they should show detectable shifts in arousal while they're under surveillance.
- Schlitz and others have been claiming small but statistically significant results for more than a decade. In the mid-1990s, Wiseman (a professional magician before he trained as a psychologist) tried the same experiment and found no effect. The collaboration between them began in 1996. They've swapped laboratories and shared

participant pools. According to Wiseman, Schlitz's results are on 'the very knife-edge of significance'.
- But does the experimenter effect come from somewhere other than the experimenter's psychic powers?
- In the latest study, the 'meet and greet' part of the experiment is being split from the experimental phase. On some trials, the experimenter will do both; on others, these jobs will be shared with another experimenter. Interactions between experimenters and participants are videotaped and independently rated for factors such as warmth.



The Wiseman-Schlitz experiment tests whether participants can tell if they're being watched via a CCTV link

(Source: based on McCrone, 2004)

Paranormal phenomena and the mind–brain relationship

ASK YOURSELF...
- What implications do paranormal phenomena have for belief in the existence of mind as separate from the brain?
- Do you believe that the mind exists separately from the brain?

As we noted earlier, PP grew out of spiritualism and psychical research. What seems to underlie accounts of psi is the notion of mind affecting other minds (as in ESP) or matter (as in PK), but this is exactly what most of us believe happens whenever we do anything at all, such as waggling a finger. 'Common sense' seems to assume *dualism*, the philosophical theory according to which mind and body (or mind and brain) are distinct. This contrasts with *identity theories* of the mind–body/brain relationship, which maintain that there's only 'matter' (see Chapter 49). According to Gregory (1987a):

> ... Clear-cut paranormal phenomena demonstrating disembodied mind might conceivably show identity theories to be untenable. So paranormal accounts do have empirical consequences, even though ... we may seriously doubt whether there are any such phenomena.

Similarly, if it could be shown that psi exists:

> ... Not only would strictly mechanistic models of psychology – such as Skinnerian behaviourism ... have to be scrapped, but many of the assumptions and theories of physical science would need at least to be thoroughly overhauled ... (Evans, 1987b)

According to Beloff (1987), not all parapsychologists are necessarily dualists, just as they aren't necessarily 'believers'. Blackmore is a good example of a parapsychologist who regards psi as a function of the brain (see above, page 94).

Box 6.7 Psi and consciousness
- According to Blackmore (1996), the popular view is that if ESP exists, it proves that mental phenomena are *non-local* (independent of space and time). If PK exists, it proves that mind can reach out beyond brain to affect things at a distance.
- If you equate mind with consciousness, then, hey presto, ESP and PK prove the power of consciousness. Blackmore argues that it's a desire for this 'power of consciousness' that fuels much of the enthusiasm for the paranormal.
- However, the more we look into the workings of the brain, the less it looks like a machine run by a conscious self. There's no place inside the brain where consciousness 'resides', where mental images are 'viewed' or where instructions are 'issued'. There's just massive parallel throughput and no centre (see Chapter 4).
- Indeed, Blackmore argues that there are even a few crucial experiments suggesting that conscious experience takes some time to build up and is much too slow to be responsible for making things happen (see Chapter 7):

  ... the brain seems to be a machine that runs itself very well and produces an illusion that there is someone in charge ...

- PP is trying to prove that consciousness really does have power, that our minds really can reach out and 'do' things, not only within our own bodies but beyond them.

CONCLUSIONS: THE CONTROVERSY GOES ON

According to Scott (1987):

> Perhaps the only non-controversial statement that can be made about the present position is that the controversy continues ...

Eysenck & Sargent (1993), two psychologists known for being hard-nosed scientists, who demand rigorous, objective standards of experimentation, conclude that:

Human beings do seem to use sensory abilities beyond their 'conventional' senses. They do seem to influence distant events and objects through will alone.

Some parapsychologists and physicists are working actively on possible meeting points between PP and the 'new physics' (*quantum theory/mechanics*). For example, there's evidence that the conscious act of making an experimental observation can directly influence the random events in the apparatus (Simpson, 2000). The new physics represents a major revolution in science since the beginning of the twentieth century. According to Morgan (2000), it

... has challenged the very basis of classical materialism and caused a fundamental re-examination of the traditional division between mind and matter ...

Perhaps the real significance of psi and of PP as areas of research is that they force us to question some of our basic beliefs and assumptions about the world and ourselves. Both scientists and non-scientists are capable of prejudice and closed-mindedness, and PP can be seen as a case study in 'doing science', which isn't the unbiased, objective activity many scientists take it to be (see Chapters 3 and 47).

Matthews (2004) believes that parapsychological studies are often better designed, and their results more impressive, than clinical drug trials:

... by all the normal rules for assessing scientific evidence, the case for ESP has been made. And yet most scientists still refuse to believe the findings, maintaining that ESP simply does not exist ...

Matthews concludes that science alone cannot give us what we seek – an objective view of reality. As he says:

More than any other scientific discipline, parapsychology pushes the scientific process to its limits and reveals where its faults lie. In particular, it has highlighted that, contrary to the insistence of many scientists, data alone can never settle this or any other issue. (Matthews, 2004)

CHAPTER SUMMARY

- **Parapsychology (PP)** is the scientific study of paranormal phenomena (or 'psi'), which appear to exceed the sensory means by which we normally acquire information about the environment. Because they are so extraordinary, many psychologists have denied the possibility of their existence, and the history of PP is littered with accusations of fraud.
- Modern PP was founded in the 1930s by the Rhines, and grew out of **spiritualistic research/spiritualism** and **psychical research** dating back to the 1880s.
- **Extra-sensory perception (ESP)** consists of **telepathy**, **clairvoyance** and **precognition**. The direction of influence is from environment to person. The other major type of psi is **psychokinesis (PK)**, in which the influence is from person to environment.
- PP is concerned with phenomena that mainstream psychology cannot explain. As psychological understanding increases, so the field of PP shrinks. **Near-death** and **out-of-body experiences** are increasingly being explained in terms of widely accepted **neuropsychological processes** (as opposed to occult or supernatural explanations).
- Early ESP research used **Zener cards**, which allowed the experimenter to compare the results with what would be expected by chance (i.e. guessing). In **telepathy** experiments, a **receiver** had to guess the identity of a **target** symbol being looked at by an **agent/sender**. In **clairvoyance** experiments, the cards were randomised out of sight of everyone, and in **precognition** experiments, card order was determined only **after** the receiver had made his/her guesses.
- The Rhines claimed to have established the existence of ESP, based on their use of Zener cards. This claim was disputed by critics who pointed out several methodological flaws (or potential flaws), resulting in the tightening up of the Rhines' procedures. However, revelations of fraud, together with the monotonous nature of the task, led to the search for alternative methods.
- **Free-response methods** include **remote-viewing** and the **Ganzfeld**. The so-called **Ganzfeld debate** between Honorton and Hyman, resulting in their joint statement identifying areas of agreement between them, brought parapsychologists and sceptics together in an effort to define an acceptable experiment. This resulted in a **fully automated Ganzfeld**, but the dispute between 'sheep' and 'goats' continues.
- Parapsychologists continually have to prove that they are *not* cheating, and there are also several methodological issues that, while not unique to PP, assume a more extreme form in relation to psi. These include the **'conclusive' experiment**, the **replication problem**, **publication bias** (or the **file-drawer problem**), the **inadequacy of controls** and **experimenter/participant effects**.
- Schmidt's **random event generator (REG)** is regarded by many parapsychologists as constituting a 'conclusive' experiment, but critics disagree. The safest conclusion is that there is no such thing as a fraud-proof experiment.
- Parapsychologists are more sensitive to the file-drawer problem than most other scientists, and they have taken a number of steps to get round it. These include calculating the number of studies with negative results needed to cancel out a series of positive results.
- One of the most consistent findings in parapsychological research concerns the consistency with which

different experimenters produce positive or negative results. These experimenter differences have been classified as **psi-permissive**, **psi-inhibitory** and **psi-conducive**. Important individual differences between participants relevant to psi abilities have also been identified.

- Belief in psi supports a **dualist** theory of the **mind–body/brain relationship**, as opposed to **identity theories**. However, not all parapsychologists are necessarily dualists, and mind or consciousness can be explained in terms of brain processes alone.
- **Quantum theory/mechanics** in physics, which challenges the traditional division between mind and matter, may offer a revolutionary way of thinking about the world that could accommodate paranormal phenomena.

Links with other topics/chapters

- Parapsychology raises fundamental questions regarding the *nature of science* – in particular, its objectivity (Chapter 3). This is related to the *biases and prejudices* of scientists themselves (Chapter 47). These issues are relevant to all aspects of psychological (and other scientific) research, but are highlighted in PP.
- The reality of psi has fundamental implications for theories of the *mind–brain relationship*, especially those *reductionist* theories which claim that any psychological account of 'the mind' can be replaced by a neurophysiological one (Chapters 4 and 49). It also has implications for the *free will versus determinism* debate (Chapter 49 again).
- There's evidence that people with particular personality characteristics (such as extroverts: Honorton *et al.*, 1990) may be more likely to display psi abilities (Chapter 42).

What is 'consciousness'?
- Are only human beings 'conscious'?
- Some other definitions
- Freud's theory of consciousness

Consciousness, arousal and alertness
- Tonic alertness
- Phasic alertness

Consciousness and attention
- Focal attention

Consciousness and brain activity
- How might the brain generate consciousness?

The functions of consciousness: what is it for?

Two kinds of consciousness

Consciousness and the electroencephalogram (EEG)

Sleep
- Sleep and the circadian rhythm
  - *The internal or biological clock*
  - *The effects of disrupting the biological clock*
- The physiology of sleep
- Varieties of sleep and the ultradian rhythm
- Sleep and dreaming
  - *Rapid eye movements and dreams*
- The effects of sleep deprivation
- Theories of sleep
  - *The restoration theory*
  - *Evolutionary theory*
  - *Hobson's levels*

Dreaming
- Theories of dreaming
  - *Reorganisation of mental structures*
  - *Activation-synthesis model (Hobson & McCarley, 1977; McCarley, 1983)*

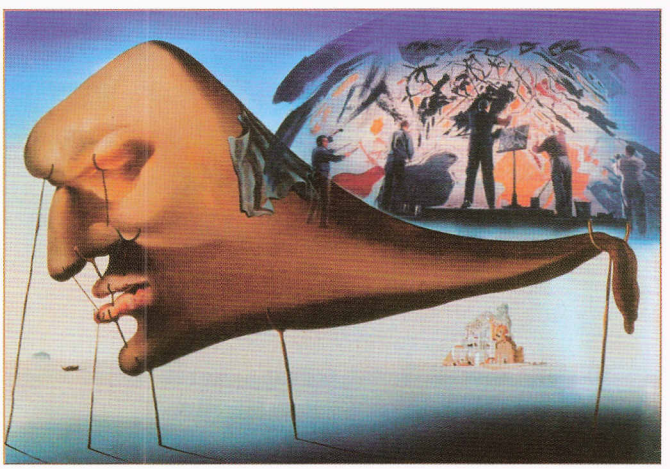
Conclusions: integrating neurobiological, evolutionary and psychological accounts of dreaming

Chapter summary

Links with other topics/chapters

7

STATES OF CONSCIOUSNESS AND BODILY RHYTHMS



INTRODUCTION AND OVERVIEW

For the first 30 or so years of its life as a separate discipline, pioneered by figures such as William James and Wilhelm Wundt, psychology took conscious human experience as its subject matter. As we saw in Chapter 1, *introspection* – the observation of one's own mind – was the primary method used to study it. This interest in consciousness shouldn't come as a surprise, given how fundamental it is to everything we do (Rubin & McNeill, 1983).

Yet it is the very *subjectivity* of our experience that led Watson to reject introspectionism in favour of a truly scientific (i.e. *objective*) approach to the study of psychology, namely behaviourism. Writing from the perspective of a modern neuroscientist, Greenfield (1998) states that:

> Any scientific explanation of consciousness must be objective and embrace physical properties of the brain: but at the same time it must, nonetheless, somehow take account of the subjective. This is why consciousness has been such an anathema to scientists, because the whole essence of science is objectivity. And yet we are going to deal with a phenomenon that is subjective ...

However, as part of the 'cognitive revolution' in the 1950s (which removed behaviourism from its dominant position within psychology), 'the mind' once more became an acceptable, respectable focus of psychological research. Reflecting the current interest in consciousness among neuroscientists, philosophers and psychologists, one of the questions we'll be asking is: How might the brain generate consciousness?

There's been a considerable amount of research, since the 1950s, into *sleep* as a state of consciousness, much of which involves trying to find correlations between objective measures of physiological activity and subjective experience, in particular *dreaming*. Sleep is increasingly being discussed in relation to *bodily rhythms*; disruption of these through our modern lifestyle is increasingly being seen as a risk to health. According to Hobson (1995), the rhythm of rest and activity, 'the primordial of sleeping and waking', represents one of the most universal and basic features of life. So, the study of sleep is of interest to biologists as well as to psychologists.

WHAT IS 'CONSCIOUSNESS'?

Are only human beings 'conscious'?

ASK YOURSELF...
- In what sense could non-human animals be described as conscious?

If being conscious means having sensations of pain, cold, hunger, fear, and so on, then most species can be said to be conscious (although *sentient* might be a better term than 'conscious': see Chapter 48).

If by conscious we mean having *self-consciousness*, then humans may be unique (with the possible exception of some higher primates: see Chapters 19 and 33). According to Singer (1998), *self-awareness* (normally used synonymously with 'self-consciousness') is the experience of one's own individuality, the ability to experience oneself as an autonomous individual with subjective feelings. It's considered to be 'the result of social interactions, and hence of cultural evolution'. This suggests that it's a rather human thing to have.

Singer also claims that when we say we're conscious, we usually mean that we perceive and remember in a way that makes it possible to report about the perceived and remembered content, or to make it the object of intentional deliberations. Given the crucial role of language in these processes, and given that language is regarded by many as unique to humans (but see Chapter 19), the rest of this chapter will focus on consciousness as a characteristic of human beings.

ASK YOURSELF...
- Can you think of some other ways in which we use the term '(un)conscious/consciousness' in everyday conversation?

Some other definitions

- When we're awake we are *conscious*, but when we're asleep, in a coma or have been 'knocked out' by a punch to the head, we're *unconscious*. The term 'unconscious' is often reserved for the last two examples but, as we shall see, when we fall asleep, we do 'lose consciousness'.
- When we do something *consciously*, we do it deliberately or knowingly, but to do something *unconsciously* means doing it automatically or without having to think about it (for example, an experienced driver or typist: see Chapter 13)
- Public health campaigns (such as those promoting safe sex) are aimed at increasing *public consciousness* or awareness of the dangers of certain types of behaviour (see Chapters 12 and 24).

Freud's theory of consciousness

Freud saw consciousness as a whole comprising three levels:

1. the *conscious* – what we're fully aware of at any one time;
2. the *preconscious* – what we could become aware of quite easily if we switched our attention to it
3. the *unconscious* – what we've pushed out of our conscious minds, through repression, making it extremely inaccessible, although it continues to exert an influence on our thoughts, feelings and behaviour (see Chapters 2 and 42).

Most psychologists would agree that thoughts, feelings, memories, and so on, differ in their degree of accessibility. But most wouldn't accept Freud's formulation of the unconscious (based on repression). Indeed, other psychodynamic theorists, in particular Jung, disagreed fundamentally with Freud's view of the unconscious (see Chapter 42).

Rubin & McNeil (1983) define consciousness as 'our subjective awareness of our actions and of the world around us'. So, consciousness points *inwards*, towards our thoughts, feelings, actions, and so on, and *outwards*, towards external, environmental events (including other people). This mirrors the 'mental' orientation of Wundt and James, and cognitive psychologists since the mid-1950s, and Watson's (and Skinner's) behaviourist orientation, respectively.

CONSCIOUSNESS, AROUSAL AND ALERTNESS

Objective physiological measures, such as the electroencephalogram (EEG), electromyogram (EMG), electrooculogram (EOG) (see below), breathing and heart rates, and other correlates of consciousness, are often described as measures of level of *arousal* or *alertness*. Both subjectively and in terms of overt behaviour, there's an obvious difference between being sleepy and being wide awake in terms of degree of arousal or alertness. Less obvious are the smaller changes that occur during normal wakefulness and that are of two kinds – *tonic* and *phasic* These are mediated by different brain systems (Lloyd *et al.*, 1984).

Tonic alertness

Changes in tonic alertness reflect intrinsic (and usually quite slow) changes of the basic level of arousal throughout a 24-hour period (or even across a lifetime). They are closely related to various *biological rhythms*, in particular the *circadian rhythm* (see below). It was originally thought that the reticular formation (RF)/reticular activating system (RAS) was solely responsible for arousing and maintaining consciousness (in Chapter 4, the RAS was described as a 'consciousness switch'). For instance, if the brainstem is severed *below* the RAS, the animal will be paralysed but will remain fully alert when awake and will show normal sleep–wake EEG patterns. However, if it's sectioned *above* the RAS, it will fall into a state of continuous slow-wave sleep (see below).

KEY STUDY 7.1 Moruzzi & Magoun's (1949) study of cats' RAS

- Moruzzi and Magoun found that electrical stimulation of the RAS of sleeping cats woke them up. In anaesthetised cats it produced long-lasting signs of arousal in their EEGs. In cats that weren't anaesthetised, RAS stimulation produced behavioural signs of arousal, alertness and attention.
- According to Moruzzi and Magoun, sleep occurs when the activity of the RAS falls below a certain critical level.
- In sleep, sensory input to the RAS is reduced, and the electrical activity sweeping from the RAS up through the cortex drops below the level required to keep us awake (Diagram Group, 1982).

It's now known that other brain structures (both in the thalamus and hypothalamus) are involved in the sleep–wake cycle, and the coordination of all these systems is necessary for the initiation and maintenance of conscious awareness. Both during wakefulness and sleep, there are periodic, fairly predictable changes in the degree of alertness: the daytime changes are governed by a *diurnal rhythm* and the sleep (night-time) changes by an *ultradian rhythm*.

Phasic alertness

Changes in *phasic alertness* involve short-term, temporary variations in arousal, over a period of seconds, initiated by novel and important environmental events. An important component of these changes is the *orienting response* to arousing stimuli. It involves a decrease in heart rate and breathing rate, pupil dilation, tensing of the muscles and characteristic changes in the EEG, which becomes desynchronised.

If the stimuli are continuously presented, the orienting response is replaced by *habituation*: the person or animal stops responding to them. Habituation is, in fact, a form of *adaptation*. It's more important from a survival point of view to respond to novel stimuli rather than constant ones, and since most stimuli are relatively constant, we need to be able to attend selectively to those that are different and/or unexpected. It's the *changing* aspects of the environment that demand, and usually receive, our attention, and the nervous systems of animals and humans have evolved so as to make them especially responsive to change.

CONSCIOUSNESS AND ATTENTION

Although consciousness is difficult to describe because it's fundamental to everything we do (Rubin & McNeil, 1983), one way of trying to 'pin it down' is to study what we're paying attention to – what is in the forefront of our consciousness. According to Allport (1980a), 'attention is the experimental psychologist's code name for consciousness'.

Focal attention

Focal attention/awareness is what we're currently paying deliberate attention to and what's in the centre of our awareness (this corresponds to Freud's conscious). All those other aspects of our environment (as well as our own thoughts and feelings), which are on the fringes of our awareness, but which could easily become the object of our focal attention, are within our *peripheral attention/awareness* (corresponding to Freud's preconscious).

We seem to be capable of doing many things quite unconsciously or automatically (without having to think about what we're doing). A good illustration of this is perception. It's difficult to imagine what it would be like if we were aware of how we perceive.

Box 7.1 Perception as an automatic process: doing what comes naturally

ASK YOURSELF...

- If you haven't seen the picture below before, what do you see?
- If you have seen it before, try to explain how you saw what you saw when you first saw it.

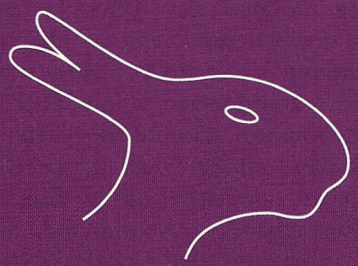


Figure 7.1

- To select *consciously* one version of the ambiguous duck/rabbit figure, we must *either* know that there's a duck and a rabbit 'in' the picture, *or* we must have already perceived both versions. (In which case, how did the original perception come about?)
- You may have had difficulty yourself perceiving the duck if your immediate perception was of the rabbit, even though you consciously 'searched' for, and tried to see, the alternative version.
- This illustrates the very important difference between *conception* and *perception*: most of the time, perception is something that we 'just do' (see Chapter 15).

Conversely, something we normally do quite automatically, such as walking down stairs, might well be disrupted if we try to bring it into focal awareness (for example, thinking about each step as we take it – don't try this at home!). In general, being able to do things automatically makes sense in terms of freeing us to attend to those environmental events that are unfamiliar or threatening in some way. If we had to think about our bodily movements when walking, this would add to the already long list of sources of stimulation competing for our attention (see Chapter 13).

Even with skills that definitely do require focal attention when first acquired (such as driving or playing the piano), once they've been mastered, they become automatic. As Lloyd *et al.* (1984) put it, unconscious processes seem to be 'precipitates' of earlier conscious processes.

Nisbett & Wilson (1977) go so far as to claim that all psychological activities (including social behaviour) are governed by processes *of which we are unaware*. If people are asked about what they think governed their behaviour after participating in a social psychology experiment, the answers they give don't usually correspond very well with the explanations psychologists offer for the same behaviour (and which they believe are the *real reasons*).

Nisbett and Wilson argue that our belief that we can account for our own behaviour ('common sense' or *intuitive explanations*) is illusory, because what *really* guides our behaviour isn't available to consciousness. We don't have direct or 'privileged' access to our cognitive processes themselves, only to the *products/outputs* of those processes. Joynson (1974), Heather (1976) and other psychologists present an opposing view, arguing that people are psychologists, and that common-sense explanations may be as valid as theoretical, scientific ones (see Chapter 1).

ASK YOURSELF...

- Do you lean towards Nisbett and Wilson on this issue, or Joynson and Heather?
- How might you try to choose between them?
- Is there a convergence between Nisbett and Wilson's ideas, and Freud's, regarding the reasons 'ordinary' people give for their own behaviour and the explanations provided by psychologists? (See Chapter 42).

CONSCIOUSNESS AND BRAIN ACTIVITY

Passingham (at Oxford University) and his colleagues from the Institute of Neurology in London (1998, in McCrone, 1999) conducted a finger-tapping experiment, which may have revolutionary implications for our understanding of what it means consciously to experience something.

Box 7.2 Could finger-tapping be the key to conscious experience?

- Participants positioned their head into the heart of a brain scanner and rested one hand on a keypad. Then, by trial-and-error, they started to work out an unknown sequence of eight finger taps.
- A tick would flash up on a screen whenever they pressed the correct key. Once they knew the sequence, their instruction was to keep drumming out the pattern until it became an unthinking rhythm. After an hour, their fingers were skipping through the complex routine almost of their own accord, and they were barely conscious of what they were doing.
- In the learning phase, having to remember what they'd just discovered while groping for the next step, regions all over the brain were clearly very active. These included a range of high-level cognitive areas in the forebrain (such as those involved with planning and memory), as well as other, lower-brain areas that regulate movements (such as the basal ganglia and the cerebellum: see Chapter 4).
- Yet, within minutes of 'getting' the sequence, this 'wash' of activity began to fade. The job of moving the fingers became confined to just a small set of motor areas:

... It seems, having used the whole brain consciously to establish the individual finger movements, just the bare bones of the routine are left. The brain now has a template or habit that can produce the same behaviour 'as if' it were still going through all the hoops of being consciously aware. (McCrone, 1999)

McCrone believes that Passingham *et al.*'s results aren't especially surprising. After all, we'd expect the brain to be capable of 'automating' motor tasks, such as typing or riding a bike. However, he refers to other imaging studies, which have shown that a similar process occurs when we learn more cognitive skills, such as matching verbs to nouns (e.g. 'hammer' and 'hit'), learning to play a computer game, and learning a path through a drawn maze. What studies using these various tasks show is that:

... paying focal, effortful attention to something calls large regions of the brain into action. The brain does not behave like a collection of isolated pathways, each doing their own thing, but as a coherent system. (McCrone, 1999)



It's not just in the learning of psychomotor skills that the whole (conscious) brain gives way to more specific (automatic) 'bare-bones' processing

There seem to be general-purpose planning centres that come into play whenever the brain is dealing with any kind of novel or difficult mental situation. These guide the more specialist language and motor centres to an appropriate output. Once the brain has found an optimal way to respond to a certain situation, the 'wider scaffolding' quickly falls away. It's not a case of practice making more efficient use of the pathways that were active during conscious learning, but rather that the response can be reduced to its bare essentials. When Passingham *et al.* asked their participants to pay close attention to their finger-tapping rhythm (after this had become automatic), their pre-frontal cortex immediately became active again. Just as significantly, their actual performance became more ragged, as if their brains were being put back into exploratory mode.

How might the brain generate consciousness?

Greenfield (1998) suggests that consciousness may have three properties.

1. Where might a 'consciousness centre' in the brain be? She claims that a recurring problem in neuroscience in general is the difficulty of 'location of function' (see Chapter 4). Vision, memory, movement and other brain/mind functions seem almost certainly *not* to be related in a modular way to single respective brain regions. Many different regions play parallel roles, analysing the outside world in various ways and reintegrating it into a connected whole. This is likely to be true of consciousness: it could be spatially multiple, but also temporally unitary (that is, we're usually only conscious of any one state at a time). This view is consistent with Passingham *et al.*'s research discussed above.
2. Rather than being all-or-nothing (either you're conscious or you're not), a more plausible scenario is that consciousness is more like the light on a dimmer switch that grows as the brain does. The more complex the brain, the greater the consciousness, with a continuum running from minimal to profound. This view can accommodate non-human animal consciousness and children's consciousness, as well as differences between the same individuals on different occasions (for example, changes in consciousness induced by drugs (see Chapters 8 and 45), religious experience, or listening to music).
3. We're always conscious of *something*: there's always some kind of focus, epicentre or trigger.

Box 7.3 Epicentres and neuronal connectivity

- The circuitry of the brain changes with learning and development. As we noted in Chapter 4, it's connections between neurons, rather than neurons themselves, that are established as a result of postnatal experience.
- This *plasticity* is especially marked in humans, and the brain remains adaptable and sensitive to life experiences even in adults (see Ramachandran's explanation of phantom limbs, pages 64–65). Experience changes the connectivity of neurons according to whatever circuits are most stimulated, and hence the most active.
- The *epicentre* is like a stone thrown into a pond, causing ripples to spread out over the surface of the water. The extent of these neuronal 'ripples' would affect the degree of consciousness at any one time. The epicentre that's going to trigger consciousness at any one moment is mediated by a group of neurons with relatively long-lasting connections between them. The activated hub of neurons generates the ripples in the brain that constitute consciousness.

(Source: Greenfield, 1998)

How might this happen? Greenfield cites an experiment by Libet, in which he pricked participants' skin and recorded the activity of large parts of the brain surface using the EEG (see Chapter 4). There was a huge amount of activity in the somatosensory cortex, but participants reported *no* conscious experience of tingling or any other sensations. They felt nothing, although their brain was registering signals of the touch to the skin, via the spinal cord. In Greenfield's model, it's this early component in the response that is equivalent to the 'epicentre'. But then, after about 500 m/sec, the activity evoked by the skin prick spread away from the somatosensory cortex to a much larger area of the brain. Only at this stage did participants report feeling a tingle.

Because we never have the same conscious experience on two separate occasions, the same number of neurons will never be stimulated to exactly the same extent or in exactly the same way more than once. Greenfield's model, therefore, needs a neuronal mechanism that can bias a large number of neurons to become activated simultaneously, and she believes that *neuromodulators* fit the bill. We saw in Chapter 4 that these chemicals 'prime' (*bias* or *modulate*) neurons for stimulation by neurotransmitters.

THE FUNCTIONS OF CONSCIOUSNESS: WHAT IS IT FOR?

Like perception, many cases of problem-solving seem to involve processes that are 'out of consciousness'. For example, solutions often seem to 'pop into our head' and we don't know how we reached them. If what's important is the solution (as opposed to the process involved in reaching it), then consciousness may be seen as incidental to information processing (consistent with Nisbett and Wilson's view). But while perception and other basic cognitive and behavioural processes may not *require* consciousness, they're at least usually *accompanied by* consciousness. Assuming that most other species lack our kind of consciousness, then we can infer that it evolved in human beings for some purpose.

ASK YOURSELF...

- From an evolutionary perspective, what advantages do you think (self-)consciousness might have conferred on human beings?
- What does it allow you to do in relation to other people?

The complexity of our nervous system, which makes our consciousness possible, provided our ancestors with the flexibility of behaviour that helped them survive. However, it's less obvious whether consciousness was itself adaptive or simply a side-effect or by-product of a complex nervous system. Some psychologists and biologists believe that consciousness is a powerful agent for controlling behaviour, which has evolved *in its own right*. Accordingly, non-conscious problem-solving systems are seen as the *servants of consciousness* (Ruch, 1984).

Box 7.4 Evolution of the 'inner eye'

- Humphrey (1986, 1993) argues that if consciousness (what he calls the 'inner eye') is the answer to anything at all, it must be to a biological challenge that human beings have had to meet, namely the human need to understand, respond to and manipulate the behaviour of other human beings:

  ... The first use of human consciousness was – and is – to enable each human being to understand what it feels like to be human and so to make sense of himself and other people from the inside. (Humphrey, 1993)

- This inner eye allowed our ancestors to raise social life to a new level, so that consciousness is essential for human social activity. We are natural psychologists in a way that species lacking consciousness cannot be (see Gross, 2003b).

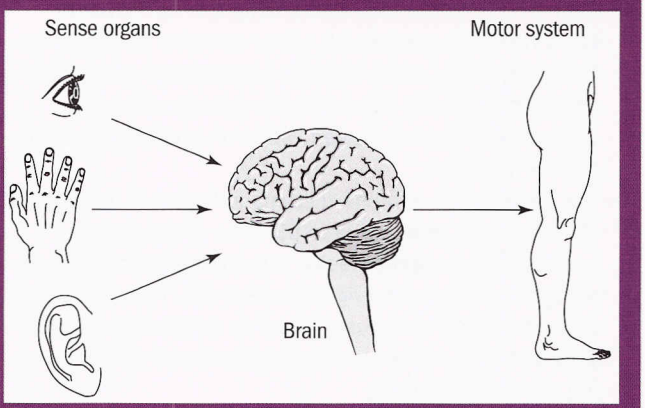


Figure 7.2a How an animal without insight works (from Humphrey, 1986)

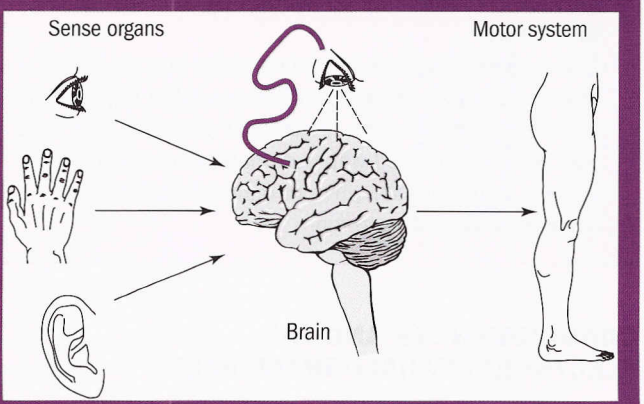


Figure 7.2b How the addition of an 'inner eye' affects the animal (from Humphrey, 1986)

TWO KINDS OF CONSCIOUSNESS

According to Hilgard's (1974) *'neo-dissociation' theory of hypnosis* (see Gross, 2003a), the consciousness which solves a problem may be different from that which reports the solution: neither is 'higher' or 'lower' than the other – they're simply different. This is consistent with work on *split-brain patients*. As we saw in Chapter 3, some psychologists believe that the two cerebral hemispheres are specialised (although they share the potential for many functions and both participate in most psychological activities), so that each is dominant with respect to particular functions.

Ornstein (1986) believes that these two modes of operation represent two distinct modes of consciousness. In daily life, we normally just alternate between them and, although they might complement each other, they don't readily substitute for one another (as when you try to describe a spiral staircase or how you tie a shoelace). Is there any evidence to support these claims?

KEY STUDY 7.2 Alpha rhythms and hemispheric lateralisation (Galin & Ornstein, 1972, cited in Ornstein, 1986)

- Galin and Ornstein recorded changes in participants' EEGs when presented with either verbal or spatial tasks.
- On verbal tasks, *alpha rhythms* (associated with a waking adult with the eyes closed) in the *right* hemisphere *increased* relative to the left, while on spatial tasks, the reverse was true.
- The appearance of alpha rhythms indicates a 'turning off' of information processing in the area of the brain involved. So, on verbal tasks, information processing is being turned off in the right hemisphere. This is the side of the brain not being used (as if to reduce the interference between the two conflicting modes of operation of the two hemispheres).
- Similarly, people with damage to the left hemisphere have greater problems with consciously executed writing, while those with right hemisphere damage have greater problems with more automatic writing, such as signing their name.
- This suggests that the left hemisphere may be more involved in highly conscious processes that require intentional behaviour and the focusing of attention. The right may be more involved with automatic or unconscious actions, and more sensitive to material outside the conscious focus of attention.

CONSCIOUSNESS AND THE ELECTROENCEPHALOGRAM (EEG)

As we saw in Chapter 4, a major method (since the 1930s) of studying the working of the brain is to monitor its electrical activity. Exactly the same information can be used to throw light on consciousness, because particular patterns of electrical activity are correlated with other measures of arousal and alertness.

Electroencephalography (literally, 'electric-in-head writing') detects the output of minute electrical 'ripples', caused by changes in the electrical charges in different parts of the brain (usually the synchronised activity of large groups of neurons). Although there are characteristic patterns common to all individuals of a particular age or developmental stage, individuals' brain activity is as unique and distinctive as their fingerprints.

The electroencephalogram (EEG) has wires, an amplifier, electromagnetic pens and paper revolving on a drum. One end of each wire is attached to the scalp (with the help of special jelly) and the other to the amplifier, which can register impulses of 100 microvolts (1/10,000 of a volt) or less and magnifies them a million times. The impulses are traced on paper by pens and appear as rows of oscillating waves.

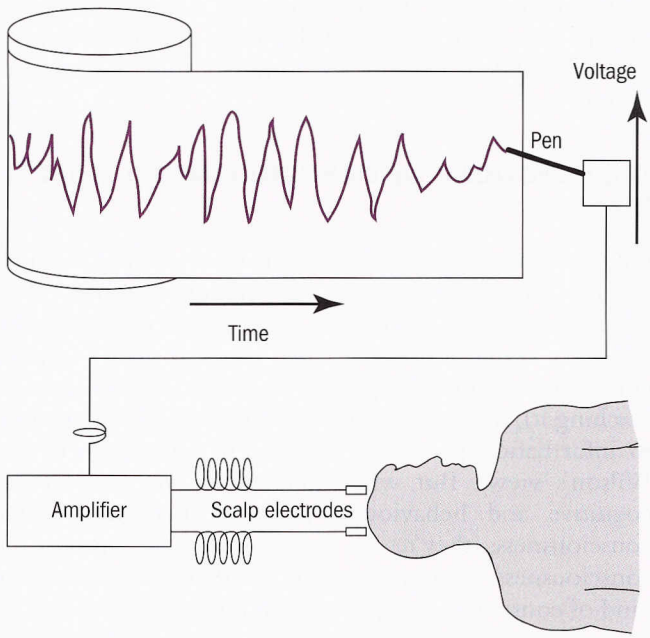


Figure 7.3 Schematic diagram of EEG recording (from Figure 3.20, page 87, from *Psychology*, third edition, by Henry Gleitman. Copyright © 1991, 1986, 1981 by W.W. Norton & Company, Inc. Used by permission of W.W. Norton & Company, Inc.)

The waves vary in frequency and amplitude.

- *Frequency* is measured as the number of oscillations per second – the more oscillations, the higher the frequency. One complete oscillation is a cycle, and the frequency is expressed as cycles per second (cps) or hertz (Hz).
- *Amplitude* is measured as half the height from the peak to the trough of a single oscillation. Frequency is the more important of the two measures.

Box 7.5 The four major types of brain wave (measured in frequency)

- **Delta (1–2 Hz):** found mainly in infants, sleeping adults or adults with brain tumours
- **Theta (3–7 Hz):** found mainly in children aged two to five years, and in psychopaths (see Chapter 46); may be induced by frustration
- **Alpha (8–12 Hz):** found mainly in adults who are awake, relaxed and whose eyes are closed; most reliably recorded from the back of the scalp
- **Beta (13 Hz and over):** found mainly in adults who are awake and alert, whose eyes are open, and who may be concentrating on some task or other; most reliably recorded from the middle of the scalp, and related to activity in the somatosensory and motor cortex

(See Table 7.1, page 115.)

Computerised electroencephalography has recently been used to detect evoked potentials, minute voltage changes induced in the brain by fairly specific visual and auditory stimuli. Often the average of a number of responses to similar kinds of stimuli is used – the *average evoked potential* (AEP) – in order to amplify the signal-to-noise ratio. AEPs are used to study newborns, some children with learning problems, patients in a coma, stroke victims, tumour patients and patients with multiple sclerosis. However, for certain brain conditions, brain scanning has largely replaced the EEG (Diagram Group (1982): see Chapter 4).

SLEEP

Sleep and the circadian rhythm

ASK YOURSELF...

- Blakemore (1988) asks what would happen if we removed all the external cues to the nature of time (*Zeitgebers*), both natural (day and night) and manufactured (clocks, mealtimes).
- Would our bodies still have their own rhythmic existence?

CASE STUDY 7.1: Siffre and the 25-hour day

- In 1972, Michel Siffre, a young French cave explorer, spent seven months underground with no cues as to the time of day.
- He had adequate food, water, books and exercise equipment, and his only contact with the outside world was via a telephone that was permanently staffed. He was linked up to a computer and video camera, by which scientists on the surface could monitor his physiological functions and state of mind.
- He organised his life into a fairly normal pattern of alternating periods of activity and sleep, and his 'day' was broken up by a normal meal pattern.
- The remarkable finding was that he chose to live a 25-hour day (not 24). For every real day that passed, he rose an hour later – the clock in his brain was running a little slow.

(Source: Blakemore, 1988)

According to Blakemore (1988):

> For all the advances of modern society, we cannot afford to ignore the rhythms of the animal brain within us, any more than we can neglect our need to breathe or eat. Without the biological clocks in our brains, our lives would be chaotic, our actions disorganized. The brain has internalized the rhythms of Nature, but can tick on for months without sight of the sun ...

Most animals display a *circadian rhythm* (from the Latin *circa dies* = 'about one day'). This is a periodicity or rhythmical alternation of various physiological and behavioural functions, synchronised to the 24-hour cycle of light and dark. So, during a 24-hour period, there's a cycle of several physiological functions (heart rate, metabolic rate, breathing rate, body temperature, hormonal secretion, urine excretion, immune function, alertness, and so on), which all tend to reach maximum values during the late afternoon and early evening, and minimum values in the early hours of the morning. (The disruption of circadian rhythms is discussed in Chapter 12 as a source of stress.)

The internal or biological clock

Rats, like humans, have an inherent rhythm of about 25 hours, which dictates their cycle of sleep and waking if they're put in the dark. This internal clock is as reliable and regular as most manufactured ones – the rhythm deviates by no more than a few minutes over several months. So how is the internal (biological) clock reset each day to the cycle of the real world, and where is the 'clock' to be found?

It's thought to be a tiny cluster of neurons, the *suprachiasmatic nucleus* (SCN), situated in the medial hypothalamus. For example, damage to the SCN in rats produces complete disappearance of the circadian rhythm: the sleep–wake cycle, eating and drinking, hormone secretion, and so on, become completely random during the course of the 24-hour period. Most of what's known about the SCN is based on experiments with non-human animals using ablation (see Chapter 4), and we cannot make direct electrophysiological recordings from the human brain. But anatomical studies show that humans have an SCN (Empson, 1993). The function of the SCN is to synchronise all the bodily functions that are governed by the circadian rhythm.

The SCN is situated directly above the optic chiasma (the junction of the two optic nerves en route to the brain: see Chapter 5). A tuft of thin nerve fibres branches off from the main nerve and penetrates the hypothalamus above, forming synaptic connections with cells in the SCN. This anatomically insignificant pathway is the link between the outside world and the brain's own clock (Blakemore, 1988). So the retina projects directly onto the SCN, which ensures that the sleep–wake cycle is tuned to the rhythm of night and day. If this connection with the retina is severed, the cycle goes 'haywire'.

The effects of disrupting the biological clock

So, in human adults at least, it appears that the circadian rhythm doesn't depend primarily on external cues, although it's surprisingly easy to outsmart our body clock by external means such as alarm clocks.

ASK YOURSELF...

- What is an average night's sleep for you?
- Is that as much as you really need?
- If not, what ill effects are you experiencing?

According to Melton (2000), scientists are warning that we ignore our natural bodily rhythms at our peril:

> ... Fighting our natural sleep tendencies ... may be grinding away at our health, triggering a string of maladies ... Giving up the late nights and weekend lie-ins in favour of a strict daily routine and a regular bedtime might be as important to our health as quitting smoking or cutting back on saturated fat.

So, how much sleep do we need?

We're biologically ill prepared to function on minimal sleep: our prehistoric genetic blueprint for sleep hasn't evolved fast enough to keep up with the pace of twenty-first-century life. Humans are more likely to need an average of ten hours of sleep a night than the four that Margaret Thatcher famously claimed to get by on. In the sleep laboratory, people who average eight hours a night, and maintain they're fully alert during the day, and who then get an extra hour's sleep at night, find their productivity levels increase by 25 per cent.

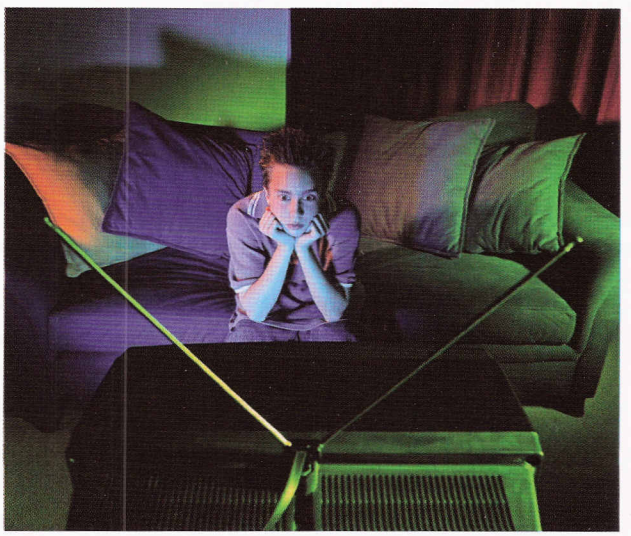
It's been suggested that each of us maintains a personal sleep bank account. We need enough sleep in the account to be able to function properly during the day. This means at least eight hours for most people, in order to cancel out the sleep debt incurred by 16 hours of continuous alertness. Similarly, Dement (2000), one of the pioneers of sleep research and the founder of the world's first sleep disorders centre (see below), proposes a rough rule of thumb: most people require about an hour's sleep for every two waking hours.



Whatever happened to lunch-breaks? Our work-hungry society demands that we eat at our work-stations

CRITICAL DISCUSSION 7.1: Are children getting enough sleep?

- Four-year-olds are thought to need about 12 hours' sleep per night, seven-year-olds ten hours, and ten-year-olds eight hours.
- Many children regularly sleep one or two hours' less than recommended.
- Part of the blame is the extended use of computer games, PCs and television in children's bedrooms – enjoyed by 67 per cent of four- to ten-year-olds in the UK.
- One American study has linked disturbed sleep among 11–13-year-olds to increased rates of depression and low self-esteem, and reduced academic performance.
- An Italian study reported that reduced sleep in children aged 14 and under was associated with an 86 per cent increase in the risk of accidents and injury.



Late-night viewing can be a health risk for children

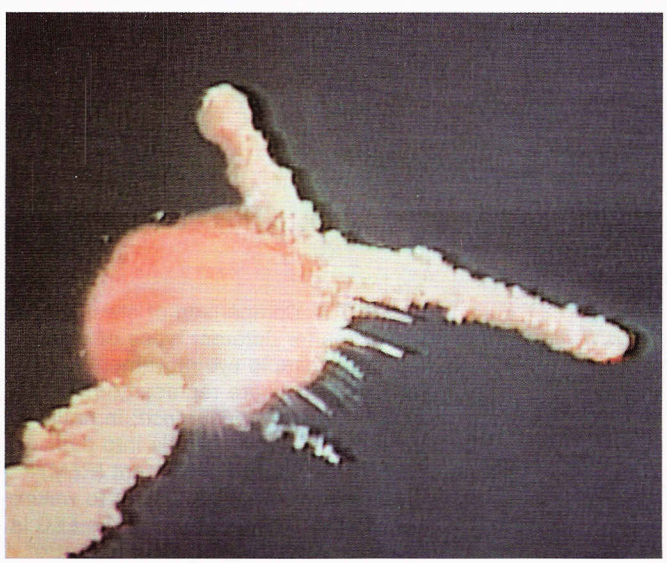
We're living in a *sleep-deprived society* (Griffey, 2004; Williams, 1998). For example, in the past 20 years, we've added about 158 hours to our annual working and commuting time – equal to a full month of working hours. (The British work longer hours than any other nation in Europe.) Young mothers with children have added an astonishing 241 hours since the 1960s (see Chapter 38). According to the National Sleep Survey (2004), we have just 6.5 hours' sleep per night (rather than eight), although the almost 2000 respondents were mainly younger than in other surveys. This is more than two hours less than our grandparents slept every night. In our 24-hour society, the pace of life is becoming faster and harder, and the stresses and pressures of work are leading to longer working hours and disrupted sleep. But, as Griffey (2004) says:

> ... sleep isn't a social inconvenience, it's a physical necessity and more and more studies are showing that sleep deprivation is a growing problem ...

How does sleep deprivation produce negative effects on health?

Dement (2000) believes that most of us carry a heavy 'sleep debt', a deficit of sleep built up over days, weeks and months. Sleep debt is dangerous, and potentially lethal. Examples are drivers who fall asleep at the wheel, pilots who are too sleepy to land planes safely, and surgeons who botch surgical procedures because they're exhausted. Both the *Exxon Valdez* and the *Challenger* space shuttle disasters were attributed to human error caused by extreme sleep deprivation. Dement also links high blood pressure, heart attacks and strokes to *sleep apnoea*, a chronic failure to sleep well because of problems breathing during sleep.

According to Melton (2000), reduced sleep can interfere with the regulation of the *immune system* (see Chapter 12). Griffey (2004) reports on the findings of several studies showing why sleep deprivation is so harmful. The metabolic and endocrine changes resulting from a significant sleep debt mimic many of the hallmarks of ageing. Chronic sleep loss could not only speed up the onset, but could also increase the severity of age-related diseases such as diabetes, hypertension, obesity and memory loss. This might happen through chronic increases in the level of cortisol. This is a stress-related hormone, which in large quantities acts as neurotoxin, killing billions of brain cells. It's also associated with increased risk of heart disease (again see Chapter 12). Shift workers are especially at risk.



The 1986 *Challenger* space shuttle exploding on live TV, killing all seven astronauts on board

Box 7.6 Are you a lark or an owl?

- Larks (*morning types/early birds*) wake early, ready to face the day, while owls (*night-adepts/night-birds*) wake later, struggle to wake up, and stay up later at night.
- There's some evidence that owls' circadian rhythms are longer than 24 hours, while larks' cycles are much closer to the 'classic' 24 hours (but see Case Study 7.1). Only 5–10 per cent of the population falls at either end of this spectrum, with most of us falling somewhere in between.
- Nevertheless, morning types endure the punishing schedule of late shifts better, and suffer fewer physical problems than evening types. Why? The crucial factor is how easily a person's body clock can be reset. Because morning people's clocks are stable and need no tuning – they're almost exactly 24 hours – even on shifts the clock remains constant.
- These findings suggest that night workers should try to orient their whole life towards being a daytime person, who just occasionally stays up all night to work. Shifts should be broken into units of just a few days to minimise circadian disruption. For example, working two successive nights is preferable to working four or five in a row. By contrast, most *chronobiologists* (those who study biological rhythms) recommend that the way to maintain alertness and reduce the risk of accidents is to try adapting the body clock to suit fully the new work pattern, making shift changes less frequent, not more (see Chapter 12). According to Folkard (in Melton, 2000):

  People have to accept that they are designed to be members of a daytime species ... Asking people to work at night is a bit like throwing them in the sea and asking them to be aquatic for a week. It is possible, but we are not designed to do it, so there are risks.

(Source: based on Melton, 2000)

ASK YOURSELF...

- Are you a lark or an owl?
- Has this changed as you've got older?
- What are the advantages and disadvantages of being what you are?

The physiology of sleep

When darkness falls, the eyes indirectly inform the *pineal gland* (the 'third eye'). This is a tiny structure at the top of the brainstem, which keeps track of the body's natural cycles and registers external factors such as light and darkness. The pineal gland secretes *melatonin* in response to darkness, making us drowsy. Downing (1988) calls melatonin 'nature's sleeping draught'. Melatonin is a hormone that affects brain cells, which produce serotonin, concentrated in the *raphe nuclei* (situated near the pons), and these secrete a substance that acts on the RAS to induce light sleep. Jouvet (1967) found that lesions of the raphe nuclei in cats produced severe insomnia, and naturally occurring lesions in humans seem to have a very similar effect.

Another important sleep centre is the *locus coeruleus* (LC), a tiny structure on each side of the brainstem, whose cells are rich in noradrenaline, thought to be involved in inducing active (or rapid eye movement/REM) sleep (see below). The LC may well serve many of the functions previously attributed to the RAS. Studies with rats suggest that the LC regulates the animal's level of *vigilance* to environmental stimuli (Empson, 1993).

There's also evidence that a substance called *factor S* accumulates gradually in the brains of animals while they're awake. If this is removed from the fluid surrounding the brain and transferred into another animal, sleep will be induced. It's likely that factor S contributes to our feelings of sleepiness (Diagram Group, 1982).

Varieties of sleep and the ultradian rhythm

In the typical sleep laboratory, a volunteer settles down for the night with not only EEG wires attached, but also wires from an electro-oculogram (EOG) ('oculo' meaning eye) and an electromyogram (EMG) ('myo' meaning muscle).

A typical night's sleep comprises a number of *ultradian cycles* (lasting approximately 90 minutes), and each cycle consists of a number of stages.

The cycle then goes into reverse, so we re-enter stage 3 and then stage 2, but instead of re-entering stage 1, a different kind of sleep (*active sleep*) appears. Pulse and respiration rates increase, as does blood pressure, and all three processes become less regular. EEGs begin to resemble those of the waking state, showing that the brain is active, supported by increases in oxygen consumption, blood flow and neural firing in many brain structures. But it's even *more* difficult to wake us from this kind of sleep than the deep stage 4 sleep, which is why it's called *paradoxical sleep* (Aserinsky & Kleitman, 1953).

Another characteristic of active sleep is the rapid eye movements (the eyeballs moving back and forth, up and down, together) under the closed lids (hence *rapid eye movement* (REM) *sleep*). Finally, while the brain may be very active, the body isn't. REM sleep is characterised by muscular paralysis (especially the muscles of the arms and legs), so that all the tossing and turning and other typical movements associated with sleep in fact only occur during stages 1–4 (non-rapid eye movement/NREM sleep). The distinction between REM and NREM sleep was originally made by Dement & Kleitman (1957).

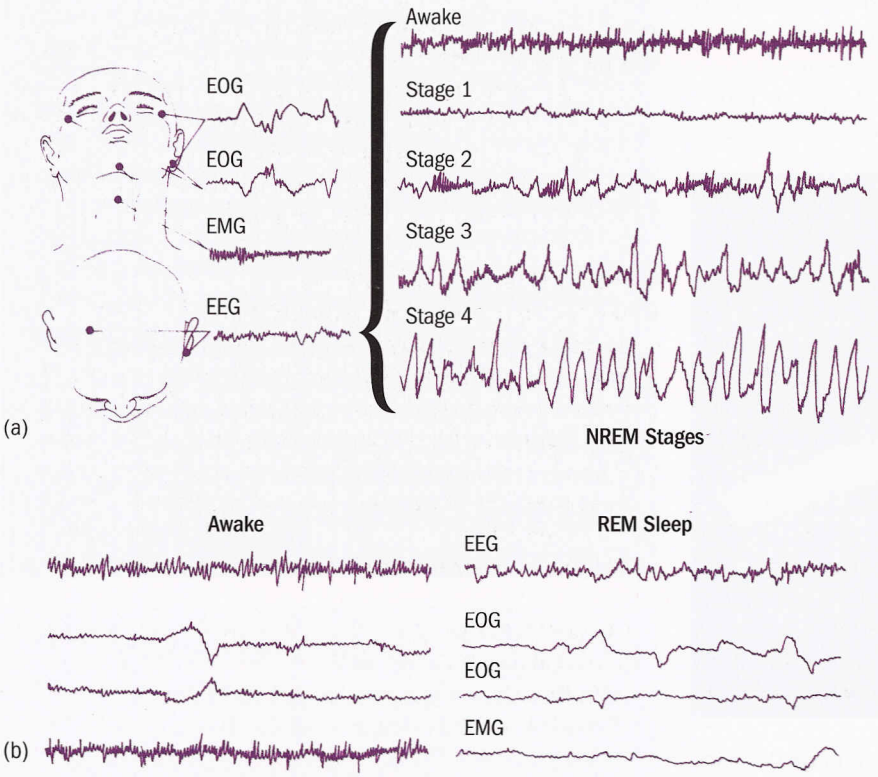


Figure 7.4 Comparison of physiological measures for different types of sleep. (a) The non-rapid eye movement (NREM) stages are represented in typical order of appearance; in reality each one gradually blends into the next. (b) Rapid eye movement (REM) sleep is in some ways similar to waking but in others quite different; the EEG is more similar to waking than to that of any NREM stage and REMs are present, but the body muscles are deeply inhibited

Table 7.1 A typical night's sleep: The four stages of non-rapid eye movement (NREM) sleep

After we shut our eyes and prepare to sleep, alpha waves begin to punctuate the high frequency beta waves of active wakefulness. The transition from being awake to entering stage 1 sleep is called the *hypnagogic period*, and is sometimes included in stage 1.

Stage 1: When we first fall asleep, the EEG is irregular and lacks the pattern of alpha waves which characterises the relaxed waking state. At first there's a reduction in frequency of alpha waves, which are then replaced by low voltage, slow theta waves, accompanied by slow rolling eye movements. Heart rate begins to slow down, the muscles relax, but we can still be woken up easily.

Stage 2: This is a deeper state of sleep, but we can still be woken fairly easily. The EEG shows bursts of activity called sleep spindles (one– to two–second waxing and waning bursts of 12–14 Hz waves). There are also occasional sharp rises and falls in amplitude of the whole EEG (*K complexes*), which last up to two seconds.

Stage 3: Sleep becomes deeper, the spindles disappear and are replaced by long, slow delta waves for up to 50 per cent of the EEG record. We're now quite unresponsive to external stimuli, and so it's difficult to wake us up. Heart rate, blood pressure and body temperature all continue to drop.

Stage 4: We now enter delta sleep (deep or 'quiet sleep': 50 per cent and more of the record consists of delta waves) and will spend up to 30 minutes in stage 4. About an hour has elapsed since stage 1 began. As in stage 3, it's difficult to wake us, unless something happens that's of great personal significance (such as our baby crying).

Stages 2–4 collectively are called *slow-wave sleep (SWS)*. As we pass from stages 1 to 4, the frequency of the waves decreases, and the amplitude/voltage increases. Also, muscle tone steadily declines.

Another feature of REM sleep is the appearance of *pontine-geniculo-occipital* (PGO) *spikes/waves*, which are generated in the pons and travel through the lateral geniculate nucleus (LGN: see Chapter 5). These were discovered by Jouvet working with cats in the 1960s. PGO spikes typically occur in bursts, often preceding individual eve movements. According to the activation-synthesis model of dreaming (see below), PGO activity is the prime source of dreaming experience (Empson, 1993).

ASK YOURSELF...

- Construct a summary table of differences between REM and NREM sleep.

After 15 minutes or so in REM sleep, we re-enter NREM sleep (stages 2–4), and so another ultradian cycle begins. However, with each 90-minute cycle (of which there are four to five on average per night), the duration of the REM sleep *increases* and that of NREM sleep *decreases*. The first cycle normally provides the deepest sleep and the shortest REM period. As the night goes on, we spend relatively more time in REM and less in NREM sleep. In later cycles, it's quite common to go from REM to stage 2, and then straight back into REM sleep (bypassing stages 3 and 4). Natural waking usually occurs during a period of REM sleep.

According to Empson (1993):

> While most all-night recording experiments are over brief periods (of up to a week), some very extended studies have been done and there is no evidence that the patterns of sleep we observe over short periods (after the first night) are in any way peculiar to the unfamiliarity of the laboratory environment.

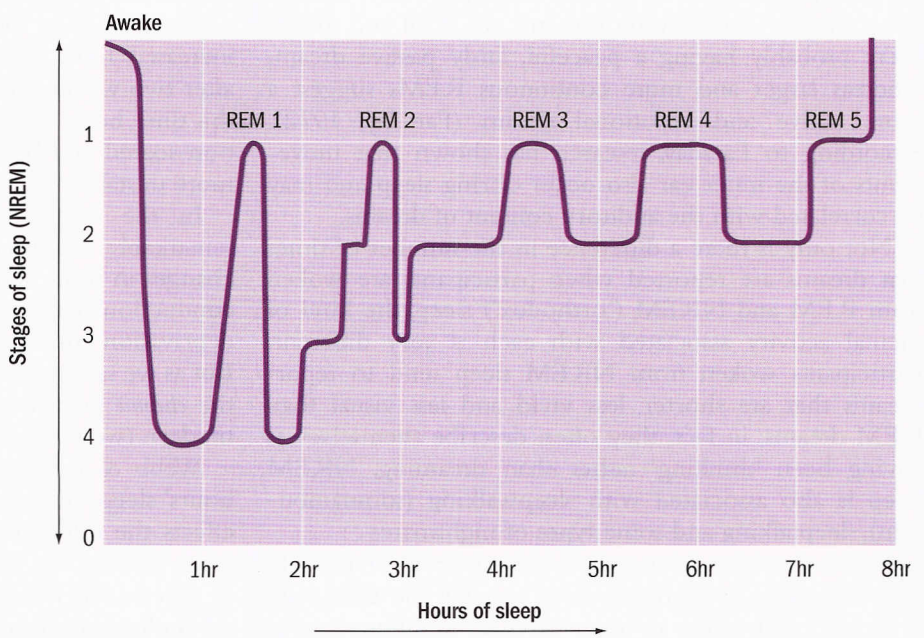


Figure 7.5 A typical night's sleep (note the disappearance of stages 3 and 4 and the relative increase in the length of REM periods)



A modern sleep laboratory

Sleep and dreaming

Rapid eye movements and dreams

About 80 per cent of the time, when sleeping volunteers are woken during REM sleep, they'll report that they've been dreaming. Being woken from NREM sleep only produces a 15 per cent 'dreaming rate'. REMs seem to be a very reliable indicator that someone is dreaming (especially in combination with the fairly high-frequency and low-amplitude brain waves). To some extent, the nature of the REMs reflects the content of the dream (for example, dreaming about a tennis match and a back-and-forth movement of the eyes, as would happen in waking life). However, it's now generally agreed that there's no one-to-one correspondence between dream action and eye movement, although cues about the general nature of the dream can often be gleaned from the REM record. For example, if the eye movements are small and sparse, we're probably having a peaceful, fairly passive dream, whereas larger and more continuous REMs suggest a more active and emotional dream (Faraday, 1972). According to Faraday, research has shown that movements of the inner ear also occur during sleep and may be correlated with the auditory content of dreams.

Not only is there a difference in the number of times that dreams are reported when participants are woken from REM and NREM ('orthodox') sleep, the kind of mental activity associated with each is very different. Participants woken from NREM sleep tend to report dreams that are shorter, less vivid and less visual than REM dreams; in fact, they often describe themselves as having been 'thinking' rather than dreaming. NREM sleep is also associated with sleepwalking (somnambulism), sleeptalking and some types of nightmare.

REM sleep has been called 'dream sleep' or the 'D-state' and some have gone as far as to call it the 'third state of existence', because in many ways it's as different from NREM sleep (the 'S-state') as it is from waking. This leads us to ask why we need to dream.

Box 7.7 Are REM dreams simply more easily recalled?

- Is it possible that the difference between dreams in REM and NREM sleep is actually an artefact of the ability to recall dreams following the 'rude awakening'?
- Beaumont (1988) argues that being woken from NREM sleep may lead to the dream being forgotten before the participant is sufficiently awake to report it (since this is a deeper kind of sleep in which the brain is much less active).
- By contrast, being woken from REM sleep may allow the ongoing dream to be remembered and then reported (here the brain is much more active).
- Clearly, if this is so, then we've stumbled upon a major confounding variable that challenges the very basis of much of the sleep/dream research. An appreciable amount of mental activity occurs during NREM sleep, and there are no completely consistent differences between dream reports obtained when participants are woken from either kind of sleep.
- However, evidence from studies of *sleep deprivation* seems to support the view of REM sleep as a dream-state sleep quite independently of the sleeper's report of having dreamed (or not).

The effects of sleep deprivation

As far as rats are concerned, long-term sleep deprivation is definitely not good for their health: it causes impaired thermoregulation, metabolic dysfunction and eventually death (Hobson, 1995). For example, Rechtschaffen *et al.* (1989a, 1989b) selectively deprived rats of either REM or both REM and NREM sleep. After a week of total deprivation, they showed progressive weight loss despite increased food intake. This became more pronounced after two weeks, and after four weeks they died. During this time, body weight plummeted, while food consumption soared and body temperature became progressively more unstable.

In the case of human beings, studies have been remarkably consistent in failing to show any marked changes in heart and breathing rates, blood pressure, skin conduction, body temperature, EMG or EEG, even when deprivation continues for up to 200 hours (Pinel, 1993). But as we saw above (page 113), this is very different from the *chronic* sleep deprivation that is symptomatic of our modern (western) lifestyle.

Webb & Bonnet (1979) limited participants to two hours' sleep on one particular night; they suffered no ill effects the following day, but that night they fell asleep more quickly and slept longer than usual. Longer periods of sleep deprivation may result in some unpleasant psychological effects, but people are remarkably able to

do without sleep. Webb and Bonnet gradually reduced the length of sleep in a group of volunteers from eight to four hours per night over a two-month period, with no detectable effect.

Box 7.8 The REM rebound

- When sleep is *abruptly* reduced (as, for example, in the case of hospital doctors, who may be on duty for 50 hours at a stretch), the effects are rather more serious. These effects include irritability, intellectual inefficiency, and an intense fatigue and need for sleep.
- These effects mirror those produced by depriving participants of approximately two hours of REM sleep (but otherwise allowing them to sleep normally). The following night, there's an increase in REM sleep (to compensate for the previous night's loss). This is called the *REM rebound*.
- When volunteers are able to get by on greatly (but gradually) reduced amounts of sleep, it's apparently because they pack their two hours of REM tightly into their sleeping time (thus reducing the amount of NREM sleep in between their dreams). When sleep is abruptly reduced, there's no time to adopt this alternative dreaming-sleep pattern.

What evidence is there for the REM rebound?

- Dement (1960) woke participants from their REM sleep on five successive nights (while those in a control group were only woken during NREM sleep periods). When they were allowed to sleep uninterruptedly, they did 60 per cent more dreaming until they'd made up their lost REM time. For as many as five nights following their REM deprivation, they spent more time in REM sleep than usual, and on some nights they doubled their REM time.

Theories of sleep

According to Blakemore (1988):

> Our planet is a dangerous place; there is ruthless competition for limited resources and only the fittest survive. And yet all the most advanced animals, normally alert, shrewd, watchful, drop their defences to sleep. Even human beings, the most spectacularly successful species, spend one-third of their lives more or less paralysed and senseless. If sleep is so risky, it must bestow a huge benefit on animals that indulge in it, or it would have been eliminated by the powerful forces of natural selection. Animals that did not need sleep would surely have evolved and prevailed over their sleepy competitors ... sleep must surely be valuable ... (Blakemore, 1988)

Empson (1993) maintains that even though physiologists have made great strides in understanding sleep mechanisms, this hasn't greatly helped in understanding what sleep is for. While sleep has the features of a primary drive (such as hunger and sex), what makes it unique as a primary biological drive is that the need for sleep is reflected in *decreased levels of arousal*, and its satisfaction is associated with further decreases. Sleep, therefore, represents a serious exception to the view that organisms seek a single optimal level of (non-specific) arousal (Lloyd *et al.*, 1984: see Chapter 9).

The restoration theory

Oswald (1966) maintains that both REM and NREM sleep serve a restorative, replenishing function. NREM restores bodily processes that have deteriorated during the day, while REM sleep is a time for replenishing and renewing brain processes, through the stimulation of protein synthesis.

Box 7.9 REM sleep and the developing brain

- Restoration theory helps explain the large proportion of babies' sleeping time spent in REM sleep.
- During much of their first year, babies are sleeping for about 18 hours per 24, and by about 12 months they have two periods of sleep every 24 hours (one during the day and one at night). Not until about five years has an 'adult' pattern become established, probably as a result of both environmental and maturational factors.
- Within these changing patterns, the relative proportions of REM and NREM sleep change quite dramatically. Whereas newborns spend half their 18 hours in REM sleep, adults usually spend only one-quarter of their eight hours in REM sleep.
- The developing brain needs a great deal of protein synthesis for cell manufacture and growth, and REM sleep helps to achieve this.

An evaluation of restoration theory

- Patients who survive drug overdoses and withdrawal, and other brain 'insults', such as intensive electroconvulsive therapy (see Chapter 45), experience prolonged increases in REM sleep. These increases are consistent with the estimated time for the half-life of proteins in the brain – that is, in a six-week period, about half the brain's total protein is replaced, and this is the approximate length of the increased REM period.
- Nocturnal secretion of growth hormone (which produces bodily protein synthesis) depends on uninterrupted stage 4 sleep. In adults, a chronic lack of normal stage 4 is found in fibrositis sufferers, whose EEG during sleep is characterised by 'alpha-delta' patterns, a mixture of sleeping and waking EEG (typically experienced as fitful, 'unrestorative sleep'). The disturbance of stage 4 in healthy volunteers produces the symptoms of fibrositis.
- According to Empson (1993), all this evidence is consistent with a general *anabolic function* for sleep: REM sleep underlies brain growth, repair and

memory functions, and slow-wave (stage 4) sleep promotes bodily growth and repair. However, cell repair goes on 24 hours a day (even though it reaches a peak at night).

- A more serious objection is that REM sleep is an active state (at least as far as the brain is concerned), and probably burns up a substantial amount of energy. Indeed, blood flow to the brain *increases* during REM sleep, and this would actually *prevent* high levels of protein synthesis. In view of this kind of evidence, Oswald (1974) maintains that *both* types of sleep are involved in the process of restoring *bodily tissue*.
- However, Oswald may have been a little premature. According to Siegel (2003), although most brain cells are at least as active during REM sleep as in waking, there's a specific group of cells that goes against this trend. These are the cells that produce the monoamine neurotransmitters (noradrenaline, serotonin and histamine). These key neurotransmitters inhibit body movement and reduce awareness of the environment, and the cells that produce them stop discharging completely during REM sleep. This cessation of neurotransmitter release is vital for the functioning of these neurons and their receptors on recipient neurons. This interruption may allow the receptor systems to 'rest' and regain full sensitivity, which may be crucial during waking for mood regulation. The monoamines also play a part in rewiring the brain to respond to new experiences. So, turning them off during REM may help prevent changes in brain connections that might otherwise be 'accidentally' created as a consequence of the activation of other neurons during REM sleep. The REM rebound might result from the need to rest monoamine systems and other 'off' systems (Siegel, 2003).

Evolutionary theory

Different species characteristically sleep for different periods. Those at risk from predators, which cannot find a safe place to sleep, or which spend large parts of each day searching for and consuming food and water (such as herd animals), sleep very little (for example, zebras sleep for only two to three hours per day). Predators that sleep in safe places, and can satisfy their food and water needs fairly quickly, sleep for much of the day. Lions, for example, often sleep more or less continuously for two to three days after gorging themselves on a kill.

According to Meddis (1975), sleep is an advantage, because it keeps the animal immobilised for long periods, making it less conspicuous to would-be predators and, therefore, safer. The safer the animal from predators, the longer it's likely to sleep. Meddis also argues that the long sleep periods of babies have evolved to prevent exhaustion in their mothers and, in this sense, sleep is still functional – at least for mothers of babies and small children! As to the need for immobilisation, this no longer seems viable as an explanation of sleep in humans, and so may be regarded as a remnant of our evolutionary past.

An evaluation of evolutionary theory

- According to the theory, a preyed-upon species may sleep for *shorter* periods (because of the constant need to stay on guard against predators) as well as *longer* periods (because this makes it safer from predators). In other words, whatever sleep pattern a species has, it can be explained in 'evolutionary' terms – an example of *non-falsifiability* (see Chapter 3). This represents a serious limitation of evolutionary theory.
- Empson (1993) characterises Meddis's theory as a 'waste of time' theory. He believes that the fact that all animals sleep contradicts the theory, as does the finding that sleep deprivation can be fatal (Kleitman, 1927; Rechtschaffen *et al.*, 1989a, 1989b).
- A weaker version of the 'waste of time' theory was proposed by Horne (1988), who distinguishes between *core sleep* (which is necessary) and *optional sleep* (which isn't). Evidence from sleep deprivation experiments (both partial and total) shows that accumulated sleep 'debts' are made up to some extent on recovery nights, but never entirely. For example, REM rebound accounts for approximately 50 per cent of the REM sleep lost during selective awakenings. This suggests that only the first three hours of sleep are truly necessary (core sleep), and the rest is optional (having no physiological function).
- But most of us eat more than we absolutely need to in order to keep body and soul together, yet no biologist would say that because a proportion of feeding was optional that feeding was only partly functional (Empson, 1993). He concludes by saying:

> ... sleep appears to be ubiquitous and necessary; it is a complex function of the brain involving far-reaching changes in body physiology as well as brain physiology. It is difficult to believe that it does not have an important function and the restorative theories provide a coherent account of what this might be.

Hobson's levels

Although not a discrete theory, Hobson (1995) proposes that the function of sleep can be analysed at different levels.

- At the *behavioural level*, sleep suppresses activity at a time (night-time/darkness) when the chances of finding food or a mate are relatively low. Also, such activities have a high energy cost in warm-blooded animals when the temperature is low. This makes sleep behaviourally very efficient. In addition, the enforced nature of sleep and its relation to resting activity serves to unite animals in a family or pair-bonded situation, which may encourage sexual behaviour and promote

the care and development of the young. Hobson finds it incredible that ethologists have failed to recognise and systematically study sleep as a form of behaviour (see Chapter 2).

- At the *developmental level*, a function of REM sleep for developing organisms could be the guaranteed activation of neural circuits underlying crucial, survival behaviours (see Box 7.9). From an evolutionary point of view, there would be great advantages gained from ensuring the organised activation of the complex systems of the brain before the organism has developed the ability to test them in the real world. In both the developing and the adult animal, REM sleep could constitute a form of *behavioural rehearsal*.
- At the *metabolic level*, the recurring cycles of NREM/REM sleep are accompanied by major changes in all the body's physiological systems. NREM sleep involves decreased blood pressure, heart and breathing rates, as well as the release of growth and sex hormones from the pituitary (consistent with the restoration theory), while REM sleep involves increased blood pressure, heart and breathing rates, as well as penile erection and clitoral engorgement.

DREAMING

ASK YOURSELF...

- From what we've described above about NREM and REM sleep, is it valid to say that dreaming and REM sleep are the same thing?
- If subjective descriptions of a dream are correlated with various physiological, neurochemical and behavioural variables, can we then reduce or equate dreams with those variables?

Box 7.10 Why dreams and REM sleep aren't the same thing

- The correlation between dreams and REM sleep is real enough – but it isn't perfect. Earlier, we noted that (vivid) dreaming is reported from 80 per cent of REM awakenings, but only 15 per cent of NREM awakenings. Blackmore (2003) gives figures of 70–95 per cent and 5–10 per cent respectively. Mentation (mental activity) of some sort is reported in about 50 per cent of NREM awakenings. The figures vary according to the criteria used (Empson, 2001). So, being in REM sleep doesn't guarantee dreaming, and, conversely, dreaming can and does occur in NREM sleep.
- Human foetuses spend about 15 hours per day in REM sleep – but they couldn't be 'dreaming' (since experience of the world is the 'raw material' of dreams: see below).
- From what we know about REM sleep in other species, and from what we believe about their dreams and state of consciousness, we must conclude that dreaming and REM sleep aren't the same thing (Blackmore, 2003).

ASK YOURSELF...

- How do dreams differ from waking consciousness?

Although dreaming and REM sleep aren't the same thing, dreaming is associated with REM sleep, and psychologists have developed reliable techniques for establishing when someone is likely to be dreaming. But there's been no equivalent progress in understanding the *nature* of dreams. According to Empson (1993), a starting point must be to establish clearly how dreaming differs from waking consciousness. Empson identifies four such differences:

1. Dreams *happen to us* as opposed to being a product of our conscious control:

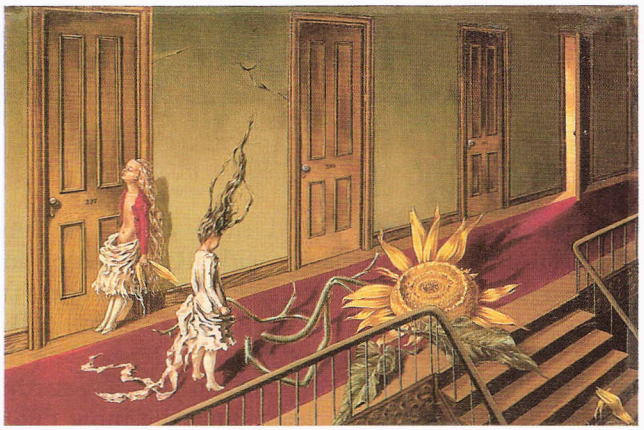
   ... When dreaming we are the spectators of an unfolding drama, and only rarely does one have the impression of being in control ...

   Lucid dreaming, in which the dreamer 'knows' s/he is dreaming and decides how the dream plot should develop, is very rare.
2. The *logic* of waking consciousness is suspended (see Freud's theory, Chapter 42).
3. Dreams reported in the laboratory tend to be mundane and lack the *bizarre quality* of 'normal' dreams, probably because only the strangest experiences are remembered when we wake normally after a night's sleep.
4. Dreams have a *singlemindedness*: the imagery of the dream totally dominates the dreamer's consciousness. But when we're awake, we normally reflect on the stream of consciousness as it goes on, and can be aware of one thing but simultaneously imagine something else. (Recall that Greenfield, 1998, claims that waking consciousness is single-minded: see above, page 108).

Hobson (1995) describes dreams as typically including:

- *hallucinations* (predominantly visual, although auditory, tactile and movement sensations are also prominent, with taste and smell under-represented and pain extremely rare)
- *delusions* (believing that the events are real)
- *cognitive abnormalities* (such as the occurrence of events that would be physically impossible in the real world)
- *emotional intensification* and *amnesia* (we forget over 95 per cent of our dreams).

These characteristics have led to a comparison between dreams and abnormal states of mind, as in schizophrenia and organic mental disorders, in particular delirium (see Chapter 44).



Dorothea Tanning's *Eine Kleine Nacht Musik* (1944). The impossible nature of the imagery depicted in the painting is what gives dreams their distinctive flavour

Theories of dreaming

ASK YOURSELF...

- What's dreaming for?
- Do dreams have a function of their own, or are they just an accompaniment to certain sleep states?
- Why do we dream?

Reorganisation of mental structures

According to Ornstein (1986), REM sleep and dreaming may be involved in the reorganisation of our *schemas* (mental structures), so as to accommodate new information. People placed in a 'disturbing and perplexing' atmosphere for four hours just prior to sleep (asked to perform difficult tasks with no explanation) spend longer in REM sleep than normal. REM time also increases after people have had to learn complex tasks.

This may explain why REM sleep decreases with age. As we have seen, newborns spend 50 per cent of their (approximately) 18 hours of sleep in REM sleep compared with 25 per cent spent by adults in their (approximately) eight hours. Oswald suggested that babies' brains need to process and assimilate the flood of new stimuli pouring in from the outside world, and that this is (partly) achieved through REM sleep (see Box 7.9, page 117).

Activation-synthesis model (Hobson & McCarley, 1977; McCarley, 1983)

The cortex is highly active during REM sleep (*activation*), although it receives little external stimulation. While the motor cortex is highly active (generating activity that would normally produce bodily movement), these commands don't reach the muscles of the limbs but are 'switched off' at a 'relay station' at the top of the spinal column: we're effectively paralysed (*output blockade*).

Not only is the cortex isolated (unable to control muscles), but there's also inhibition of incoming signals produced by the sensory systems. Consequently, perceptions of the 'real' world are selectively attenuated (*input blockade*). Hindbrain and midbrain structures, normally associated with relaying sensory information to the cortex, spontaneously generate signals (*PGO waves*; see page 115) responsible for cortical activation. These are indistinguishable from signals that would normally have been relayed from the eyes/ears. This activity is under the control of a periodic triggering mechanism in the *pontine brainstem* (top of the spinal column, at the base of the brain).

Dreams are a conscious interpretation (*synthesis*) of all this activity. The cognitive system, which organises sensory information into the simplest meaningful interpretation when we're awake, processes all the internally generated signals as if they came from the outside world. In combination with oculomotor activity, PGO waves are sent to the visual and association cortex and the thalamus.

What we call a dream is the simplest way of interpreting these internally produced signals, by combining them into some meaningful whole. It's the unusual intensity and rapidity of brain stimulation (often involving simultaneous activation of areas not usually activated together during waking), which account for the highly changeable and sometimes bizarre content of dreams. According to Hobson (1995):

> ... the now autoactivated and autostimulated brain processes these signals and interprets them in terms of information stored in memory ...

Many dream experiences do seem to reflect the brain's and body's state, and so can be thought of as interpretations of these physical states. For example, being chased, locked up or frozen with fear may well reflect the blocked motor commands to the muscles. Floating, flying and falling experiences may reflect vestibular activation, and the sexual content of dreams may reflect clitoral engorgement and penile erection (Ornstein, 1986).

Evaluation of the activation-synthesis model

- In a sense, we dream instead of acting (perhaps suggesting the need for rest/restoration for the body). Cats with brainstem injury act out their dreams by, for example, chasing the mouse of their dreams while ignoring the real mouse in their cage: they aren't paralysed in the normal way during REM sleep.
- Crick & Mitchison (1983) proposed a modified version of the model, which they called *reverse learning*. The basic idea is that we dream in order to forget. The cortex (unlike other parts of the brain) is composed of richly interconnected neuronal networks. The problem with such a network system is that it malfunctions when there's overload of incoming information. To deal with such overload, the brain needs a mechanism to 'debug' or 'clean up' the network, and REM sleep is that mechanism. In this way, we awake with a cleaned-up network, and the

brain is ready for new input. According to Crick and Mitchison, trying to remember our dreams may not be a good idea: they are the very patterns of thought the system is trying to tune out.

- For others, especially psychoanalysts and other psychodynamic psychologists, it's *essential* that we do remember our dreams, so that we can try to understand their meaning. For example, Freud saw dreams are *wish fulfilments*. Both he and Jung saw *symbolism* as being of central importance in dreams, which put the dreamer in touch with parts of the self usually inaccessible during waking life (see Chapter 42). Hall (1966) saw dreams as 'a personal document, a letter to oneself' and, like Jung, advocated the study of *dream series*, rather than single, isolated dreams.

CONCLUSIONS: INTEGRATING NEUROBIOLOGICAL, EVOLUTIONARY AND PSYCHOLOGICAL ACCOUNTS OF DREAMING

Winson (1997), a neuroscientist, argues that neural and psychological theories of dreams are *not* mutually exclusive. While Crick and Mitchison argue that we need to forget our dreams, Winson claims that

> ... dreams may reflect a memory-processing mechanism inherited from lower species, in which information important for survival is reprocessed during REM sleep. This information may constitute the core of the unconscious.

To maintain sleep, locomotion had to be suppressed by inhibiting motor neurons. But suppressing *eye movements* wasn't necessary, because these don't disturb sleep. With the evolution of REM sleep, each species could process the information most needed for its survival (such as the location of food, and means of predation or escape). In REM sleep, this information may be re-accessed and integrated with past experience to provide an ongoing strategy for behaviour. Similarly, *threat simulation theory* (Revonso, 2000) claims that dreaming evolved to simulate the very real threats to individuals' physical survival (and hence to reproductive success) during human evolution. Ways of dealing with these threats could be 'practised' in dreams.

According to Humphrey (1986, 1993), dreams are also about practising all sorts of physical, intellectual and social skills ('dreaming as play'):

> Dreaming represents the most audacious and ingenious of nature's tricks for educating her psychologists ... (Humphrey, 1986)

It may be true that dreams are just an evolutionary 'epiphenomenon', without any adaptive function (Flanagan, 2000), and it may also be true that many people function perfectly well without remembering their dreams (Hobson, 2002). Nevertheless, we can still use dreaming in our waking lives:

> ... studying our own dreams can be valuable in all sorts of ways. They can reveal our inner motivations and hopes, help us face our fears, encourage growing awareness, and even be a source of creativity and insight ... (Blackmore, 2003)

CHAPTER SUMMARY

- Since the cognitive revolution dislodged behaviourism from its dominant position in psychology, cognitive processes and consciousness have once more become important areas of psychological research.
- Freud distinguished three levels of consciousness: **conscious**, **preconscious** and **unconscious**. Most psychologists do not accept Freud's view of the unconscious as based on repression, but they would accept that there is a **continuum of consciousness**.
- **Arousal/alertness** can be defined objectively in terms of various physiological measures, such as EEGs, EOGs, EMGs, breathing and heart rates. These are **correlates** of consciousness.
- Changes in **tonic alertness** are closely linked to various biological rhythms, especially the circadian rhythm. The RF/RAS plays an important role in arousing/maintaining consciousness. Alertness changes in fairly predictable ways both during wakefulness (controlled by a **diurnal rhythm**) and sleep (**ultradian rhythm**).
- Changes in **phasic alertness** involve changes in the **orienting response** to arousing stimuli. This is complemented by **habituation**, a form of adaptation. Human and non-human nervous systems have evolved such that they are especially responsive to **change**.
- Consciousness can be experimentally pinned down by studying **attention** (**focal** or **peripheral**). Perception seems to take place largely unconsciously, and many behaviours are carried out quite automatically, allowing us to attend consciously to the unfamiliar or threatening aspects of our environment.
- Nisbett and Wilson claim that all psychological activities are governed by processes that are not available to consciousness. However, Humphrey maintains that the 'inner eye' of consciousness evolved to allow our ancestors to relate to others based on understanding others' experience of being human.
- Most animals display a **circadian rhythm** synchronised to the 24-hour cycle of light and dark, involving a rhythmical alternation of various physiological and behavioural functions.
- The internal/**biological clock** is thought to be the **suprachiasmatic nucleus (SCN)**, part of the hypothalamus. The retina projects directly onto the SCN, ensuring that the sleep–wake cycle is tuned to the rhythm of night and day.
- When darkness falls, the **pineal gland** begins to secrete **melatonin**, making us drowsy. It affects brain cells that produce **serotonin** concentrated in the

raphe nuclei; these secrete a substance that acts on the RAS to induce light sleep. The **locus coeruleus (LC)** is rich in noradrenaline, which induces REM sleep.

- Modern living increases the likelihood that the circadian rhythm will be disrupted, and people are sleeping less than human beings are designed for by evolution. This is having harmful effects on people's mental and physical health.
- Sleep is measured in the laboratory using an **electrocephalogram (EEG)**, **electrooculogram (EOG)** and **electromyogram (EMG)**. A typical night's sleep comprises four to five **ultradian cycles**, each consisting of several stages. Stages 2–4 are collectively called **slow-wave sleep (SWS)** or 'deep' sleep; stages 1–4 are collectively called **non-rapid eye movement (NREM)** sleep.
- **Rapid eye movement (REM)** or **active** sleep replaces stage 1 at the beginning of the next cycle. Physiological processes increase and EEGs begin to resemble those of the waking state, yet it is more difficult to wake someone than from stage 4 sleep (making it **paradoxical**). With each ultradian cycle, the duration of REM sleep increases.
- Depriving people of REM sleep produces the **REM rebound**, suggesting that dreaming associated with REM sleep is perhaps the most important function of sleep. But psychologists are still very unclear about the functions of sleep. It is unique as a primary biological drive in that the need for sleep is reflected in **decreased** levels of arousal.
- According to Oswald's **restoration theory**, REM and NREM sleep help replenish bodily and brain processes respectively. However, the fact that cell repair goes on 24 hours a day, and that the brain is highly active during REM sleep, led Oswald to claim that *both* REM and NREM sleep are involved in restoration of bodily tissue.
- Meddis's **evolutionary theory** claims that sleep keeps the animal immobilised and so safer from predators, so longer sleep is associated with greater safety. But danger from predators is also associated with shorter sleep, because of the need to stay alert, and longer sleep is also characteristic of certain predators such as lions. This makes the theory **unfalsifiable**. **Hibernation theory** is a variant of evolutionary theory.
- According to the **activation-synthesis model**, dreams are the simplest way of interpreting all the internal, brain-produced signals that occur during REM sleep. This **activation** of the brain is consciously interpreted (**synthesis**) in the form of a dream. Psychological theories of dreams, such as those of Freud, Jung and Hall, focus on the synthesis component, stressing their significance for the dreamer.
- According to Crick and Mitchison's **reverse learning theory**, dreams are a way of 'cleaning up' the cortex's neural networks and preparing them for new input. So, we need to forget our dreams. Psychological theories, however, stress the need to remember them.
- Different theories of dreaming are *not* mutually exclusive. REM sleep may have evolved to help animals' biological survival, but they continue to serve a vital function for individuals, helping them to survive psychologically.

Links with other topics/chapters

- The distinction between conscious(ness) and self-conscious(ness)/self-awareness is crucial for understanding the *difference between humans and non-humans* (Chapters 1, 3 and 48). Self-awareness is a key feature of the *self-concept* and there's debate as to whether humans are the only primates who possess it (Chapter 33). This debate is also relevant when assessing attempts to teach language to chimpanzees and other non-human primates (Chapter 19).
- Definitions of consciousness are relevant to *attention and performance* (Chapter 13), and Freud's *psychoanalytic theory* (Chapters 2 and 42).
- Ways of measuring consciousness (in terms of arousal and alertness, sleep and dreams) involve methods used to study the *nervous system* in general (Chapter 4).
- Explanations of the functions of consciousness (including theories of sleep and dreams) often take an *evolutionary* perspective (Chapter 2).

Defining abuse
The concept of addiction
Criticisms of the concept
Is there more to addiction than drugs?
Substance use and abuse
Dependence
Physiological vs psychological dependence
Classifying drugs
The effects of drugs
Depressants
Alcohol
How does alcohol affect us?
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Who drinks, and why?
Stimulants
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8

SUBSTANCE DEPENDENCE AND ABUSE



INTRODUCTION AND OVERVIEW

For thousands of years, people have taken substances to alter their perception of reality, and societies have restricted the substances their members are allowed to take. These substances, which we usually call drugs, are *psychoactive*, denoting a chemical substance that alters conscious awareness through its effect on the brain. Most drugs fit this definition. Some – for example, aspirin – are *indirectly* psychoactive: their primary purpose is to remove pain, but being headache-free lifts our mood. Others, however, are designed to change mood and behaviour. These are collectively referred to as *psychotherapeutic* drugs, such as those used in the treatment of anxiety, depression and schizophrenia (see Chapter 45).

This chapter is concerned with psychoactive drugs used to produce a temporarily altered state of consciousness for the purpose of *pleasure*. These include *recreational drugs*, which have no legal restrictions (such as alcohol, nicotine and caffeine), and *drugs of abuse*, which are illegal. However, just as recreational drugs can be abused (such as alcohol), so illegal drugs are taken recreationally (such as ecstasy). 'Substance abuse', therefore, doesn't imply particular types of drug, but refers to the extent to which the drug is used, and the effects – emotional, behavioural and medical – on the abuser.

What counts as a recreational drug or a drug of abuse changes over time within a society, as well as between societies. For example, cocaine had been freely available over the counter in a huge variety of tonics and pick-me-ups before the 1930s, and was an ingredient of the original blend of Coca-Cola in the 1890s. At that time, it was seen as a harmless stimulant (Plant, 1999); now it's a Class A drug. Conversely, in the UK cannabis was reclassified in 2004 from a Class B to a Class C drug (still illegal but seen as less dangerous and carrying a more lenient, if any, punishment). Its therapeutic (medical) use is likely to become legalised within three years (Bennetto, 2000). According to Veitia & McGahee (1995):

> Cigarette smoking and alcohol abuse permeate our culture and are widespread enough to be considered ordinary addictions ... The degree to which these drugs permeate our culture and the extent to which they are accepted by our society distinguish them from other addictive but illegal substances such as heroin and cocaine.

DEFINING ABUSE

The concept of addiction

ASK YOURSELF...
- What do you understand by the term 'addiction'?

Until recently, the study and treatment of drug problems were organised around the concept of *addiction*: people with drug problems have problems because they're addicted to the drug (Hammersley, 1999). Addicts are compelled by a physiological need to continue taking the drug, experience horrible physical and psychological symptoms when trying to stop, and will continue taking it despite these symptoms because of their addictive need. Their addiction will also change them psychologically for the worse, they will commit crimes to pay for the drug, neglect their social roles and responsibilities, and even harm the people around them. In addition, some drugs are considered inherently much more addictive than others (see below), and substance users can be divided into addicts and non-addicts.

Criticisms of the concept

- It's an oversimplification. Most professionals who deal with people with any kind of problem – medical, criminal, educational, social – will have seen many clients who aren't exactly addicts, but whose drug use seems to have contributed to, or worsened, their other problems (Hammersley, 1999).
- It's based on the *addiction-as-disease* model. While medical models such as this are generally persuasive, because they offer a diagnosis, definition and a pathology, they also appear to relieve the 'addict' of responsibility for his/her behaviour (Baker, 2000: see Chapter 43).

CRITICAL DISCUSSION 8.1: Limitations of the addiction-as-disease model

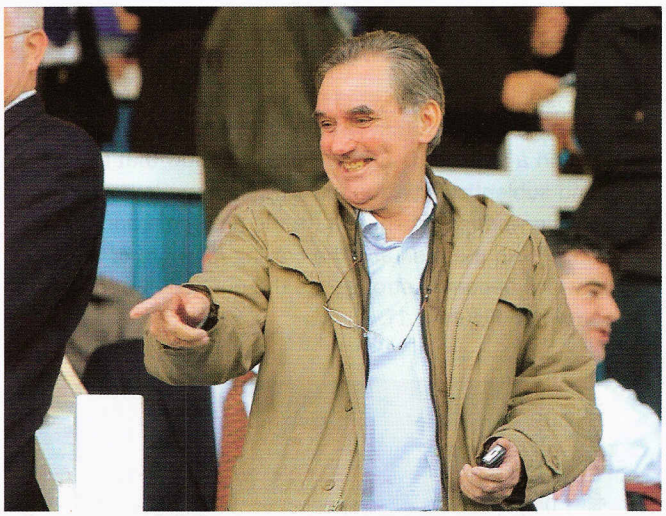
Sussman & Ames (2001) identify four major problems with this model.

1. *There's no independent means of verifying the existence of the disease.* In several conditions, the factors that produce certain symptoms can be assessed (for example, a viral infection can be measured through a throat culture, antibody production or high temperature). Also, the factors can be assessed independently of the resulting symptoms (for example, it can be established that high temperature is caused either by a poison, virus or bacterium).

   But with behavioural disorders it's often difficult to separate factors from symptoms (Davison & Neale, 1990). If the problem were merely one of *behaviour*, then no longer taking the drug would stop the problem. But relapse rates never fall to zero and are 65 per cent in the first year following treatment, halving each year after that. This is true regardless of the substance involved. High relapse rates imply underlying factors, but there are no independent measures of assessing the underlying factors.

   However, recent research evidence has thrown light on the 'addicted brain', and this might provide the independent assessment of underlying factors required by the disease model (see Research Update 8.1, page 126)
2. *Variation in disordered behavioural symptoms.* Behavioural symptoms may be defined as more or less disordered depending on the social context. For example, someone who gets drunk and obnoxious once a month may be seen as an alcoholic in a church-going community – but not in a college dorm. Also, drug abuse can be seen as falling somewhere on a continuum, rather than a binary (yes/no) state, which is often used to define a disease ('you're either an addict or you're not') (see Chapter 43). However, heart disease, for example, also falls along a continuum, which is why it can be 'missed' or misdiagnosed (even though there are objective tests that can detect it).

3. *Variation in behavioural symptoms may not reflect the same underlying processes*. For example, it's unclear whether or not a person who drinks alcohol very occasionally, or one who drinks heavily periodically, or one whose drinking is always out of control, are subject to the same underlying influences. In other words, there are many patterns of drug abuse, but it's unclear whether they all reflect the same cause.
4. *The aetiological factors for drug abuse as a behavioural disorder aren't known*. We don't know what makes people abuse drugs. If there's a common underlying cause, it's plausible that this has nothing to do with drug abuse behaviour. Indeed, drug abuse is associated with various problem behaviours, including crime, violence, sensation-seeking and poor diet, which may precede the abuse as a disease.



George Best, gifted footballer and famous alcoholic

According to Hammersley (1999), the more modern view is to see drug problems as two-fold: *substance abuse* and *substance dependence* (hence the title of this chapter). This view is adopted in the American Psychiatric Association's (2000) *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR: see Boxes 8.1 and 8.2). 'Addiction' now usually refers to a field of study, covering substance use, abuse and dependence, rather than to a theory of why people become dependent.

Is there more to addiction than drugs?

ASK YOURSELF...

- What do terms such as 'workaholic', 'shopaholic' and 'chocaholic' tell you about the nature of addictive behaviour?
- Can you define addiction in a way that can cover such non-drug behaviours?
- What might they all have in common?

Rather than rejecting the concept of addiction, some researchers argue that the concept should be *broadened*, in order to cover certain recent forms of 'addictive' behaviour that don't involve chemical substances at all. According to Shaffer *et al.* (1989):

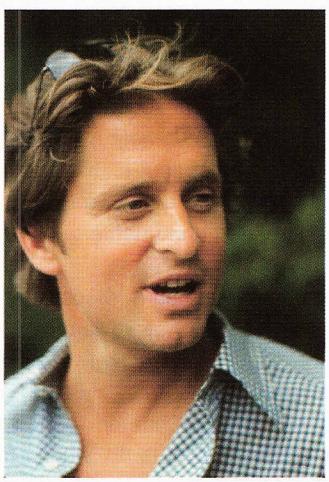
> Addictive behaviours typically serve the addict in the short run at the price of longer-term destructiveness. Physical dependence is not a requisite for addiction ... addictive behaviours organise the addict's life. All of life's other activities fit in the gaps that the addictive behaviour permits.

The addiction can be to a substance or an experience: shopping, gambling or eating (or abstaining from eating: see Chapter 44) could equally fit this definition. Drawing on current definitions of substance dependence, pathological gambling, and eating disorders, Walters (1999) suggests that addiction may be defined as 'the persistent and repetitious enactment of a behaviour pattern', which includes:

- *progression* (increase in severity)
- *preoccupation* with the activity
- *perceived loss of control*
- *persistence* despite negative long-term consequences.

Similarly, Griffiths (1999b) maintains that addiction isn't confined to drugs. Several other behaviours, including gambling, watching TV, playing amusement machines, overeating, sex, exercise, playing computer games, and using the Internet, are potentially addictive. Social pathologies are beginning to surface in cyberspace in the form of *technological addictions*, which are:

> ... non-chemical (behavioural) addictions that involve human–machine interaction. They can be either passive (e.g. television) or active (e.g. computer games). The interaction usually contains inducing and reinforcing features (e.g. sound effects, colour effects ...) that may promote addictive tendencies. (Griffiths, 1995)



Michael Douglas, Hollywood star and self-confessed sex addict

Griffiths (1996) argues that these behaviours display the same *core components* of addiction (complementing Walters' 'four Ps' above), namely:

- *salience* – the activity becomes the most important one in the person's life; it dominates thinking (preoccupations), feelings (cravings) and behaviour (socialised behaviour deteriorates)
- *mood modification* – for example, the activity produces an arousing 'buzz' or 'high'
- *tolerance* – increasing amounts of the activity are needed to achieve the same effects
- *withdrawal symptoms* – discontinuation or sudden reduction of the activity produces unpleasant feelings and physical effects
- *conflict* – this may be between the addict and those around him/her, with other activities (such as work, social life, and other interests) or within the individual him/herself
- *relapse* – reverting to earlier patterns of the activity soon after a period of abstinence or self-control.

RESEARCH UPDATE 8.1: The 'addicted brain'

- Neurobiologists have long known that drugs have their effect because they ultimately boost the activity of the brain's reward system: a complex circuit of neurons which evolved to make us feel 'flush' after eating or sex. At least initially, stimulating this system makes us feel good, which encourages us to repeat whatever induced the pleasure.
- But new research indicates that chronic drug use can induce changes in the structure and function of the system's neurons that last for weeks, months or years after the fix.
- A key part of the circuit is the pathway extending from dopamine-producing neurons of the ventral tegmental area (VTA) to dopamine-sensitive neurons in the nucleus accumbens (NA), situated deep beneath the frontal cortex. These changes contribute significantly to the tolerance, dependence and craving (see below) that fuel repeated use and that lead to relapses even after long periods of abstinence.
- There are also pathways linking the NA and VTA with other brain regions that can help make addicts highly sensitive to reminders of past highs (such as drug paraphernalia and places where they've scored), vulnerable to relapse when stressed and unable to control the urge to seek drugs.
- The VTA–NA pathway acts as a 'rheostat of reward': it 'tells' other brain centres how rewarding an activity is. The more rewarding, the more likely the organism is to remember it well and repeat it.
- fMRI and PET scans (see Chapter 4) show that the NA in cocaine addicts' brains 'lights up' when offered a snort, shown a video of someone using cocaine or even a photograph of white lines on a mirror.



This image is enough to excite a cocaine addict's brain

The amygdala and some areas of the cortex also respond. While being scanned, they rate their feelings of rush and craving on a scale of 0–3. Such studies show that (a) the VTA and sublenticular extended amygdala are important to the cocaine-induced rush, and (b) the amygdala and NA influence both the rush *and* the craving for more of the drug, which becomes stronger as the euphoria wears off (as shown in Figure 8.1).

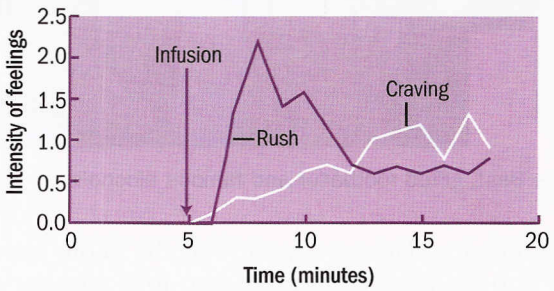


Figure 8.1 from Nestler & Malenka (2004) (reprinted with permission from Hans C. Breiter, Massachusetts General Hospital)

The same regions react in compulsive gamblers shown images of slot machines.

Substance use and abuse

According to Hammersley (1999), abuse is the use of a substance in a harmful or risky manner, without medical sanction. The concept is something of a compromise, because it's debatable whether *any* use of a substance can be entirely risk-free. It also suggests that some risks are negligible, while others are substantial. Hammersley claims that:

... The health risks of tobacco smoking now seem so substantial that all smoking is probably abuse – there is no negligible-risk use of tobacco ...

But he believes that most other drugs *can* be used in ways that make risks negligible.

Box 8.1 The DSM-IV-TR criteria for substance abuse

- A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:
  1. recurrent substance use resulting in a failure to fulfil major role obligations at work, school or home (e.g. repeated absences or poor work performance related to substance use, substance-related absences, suspensions, or expulsions from school; neglect of children or household);
  2. recurrent substance use in situations where it is physically hazardous (e.g. driving an automobile or operating a machine when impaired by substance use);
  3. recurrent substance-related legal problems (e.g. arrests for substance-related disorderly conduct);
  4. continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g. arguments with spouse about consequences of intoxication, physical fights).
- The symptoms have never met the criteria for Substance Dependence for this class of substance.

Dependence

How does dependence differ from abuse?

Box 8.2 DSM-IV-TR criteria for substance dependence

- A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:
  1. Tolerance, as defined by either of the following:
     (a) a need for markedly increased amounts of the substance to achieve intoxication or desired effect;
     (b) markedly diminished effect with continued use of the same amount of the substance.
  2. Withdrawal, as manifested by either of the following:
     (a) the characteristic withdrawal syndrome for the substance (varies from substance to substance);
     (b) the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms.
  3. The substance is often taken in larger amounts and over a longer period than was intended.
  4. There is a persistent desire or unsuccessful efforts to cut down or control substance use.
  5. A great deal of time is spent in activities necessary to obtain the substance (e.g. visiting multiple doctors or driving long distances), use the substance (e.g. chain-smoking), or recover from its effects.
  6. Important social, occupational, or recreational activities are given up or reduced because of substance use.
  7. The substance use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g. current cocaine use despite recognition of cocaine-induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

Specify if:

- *With physiological dependence* – evidence of tolerance or withdrawal (i.e. either item 1 or 2 is present).
- *With psychological dependence* – no evidence of tolerance or withdrawal (i.e. neither item 1 or 2 is present).

The concept of dependence is based around a constellation of symptoms and problems, not just on the idea of physiological need for a drug. Only items 1 and 2 in Box 8.2 refer to physiological dependence. Anyone who fits three or more of these criteria would be diagnosed as substance dependent. Dependence, therefore, is quite varied, and few people fit all seven criteria (Hammersley, 1999).

Most substance-dependent people have tried to give up several times, always returning to use after weeks, months or even years. They often report strong craving or desire for the substance, and are at particular risk of resuming use when stressed, anxious, depressed, angry or happy. They also often feel they have difficulty controlling the amount they take once they start. When they relapse, they often return very quickly to their old, often destructive, habits.

Physiological vs psychological dependence

It's also important to highlight the difference between physiological and psychological dependence. As Box 8.2 shows, *physiological dependence* is related to *withdrawal* and/or *tolerance* (which relates to the traditional concept of *addiction*), while *psychological dependence* isn't. However, being deprived of a substance that's highly pleasurable can induce anxiety. Since the symptoms of anxiety (rapid pulse, profuse sweating, shaking, and so on) overlap with withdrawal symptoms, people may mistakenly believe that they're physiologically dependent. Psychological dependence is, though, part of the overall *dependence syndrome* (see Figure 8.2).

A good example of the difference between the two types of dependence is imipramine, used to treat depression (see Chapter 45). When it's stopped after prolonged use, there may be nausea, muscle pain, anxiety and difficulty in sleeping, but there's *never* a compulsion to resume

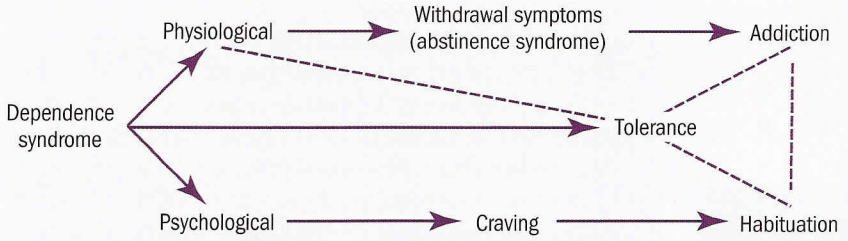


Figure 8.2 Summary of major components of dependence syndrome

taking it (Lowe, 1995). However, Lowe claims that 'psychological' dependence has little scientific meaning beyond the notion that drug-taking becomes part of one's habitual behaviour. Giving it up is very difficult, because the person has become *habituated* to it:

> Habituation is the repeated use of a drug because the user finds that use increases pleasurable feelings or reduces feelings of anxiety, fear, or stress. Habituation becomes problematic when the person becomes so consumed by the need for the drug-altered state of consciousness that all his or her energies are directed to compulsive drug-seeking behaviour ... (Lowe, 1995)

Physiologically addictive drugs, such as heroin and alcohol, typically cause habituation *as well*. Most widely used recreational drugs, including cannabis, cocaine, LSD, PCP (see Table 8.1), and *methylenedioxymethamphetamine* (*MDMA*: otherwise known as '*ecstasy*'), *don't* cause physiological dependence – but people *do* become habituated.

Some dependent people can stay dependent for long periods *without* suffering any other problems. This applies particularly to people who otherwise fit well into society, and who haven't experienced financial, legal or health problems as a result of their substance use – such as many smokers. Some very heavy drinkers 'only' damage their livers, and even some heroin or cocaine users fit this pattern. Nevertheless:

> ... one of the most striking things about the counselling of substance dependent people is that they will continue to use the substance even when they have suffered very severe problems as a result ... (Hammersley, 1999)

Some of these severe problems are discussed in the section on the effects of drugs, below.

Classifying drugs

Psychoactive drugs have been classified in several different ways. For example, Hamilton & Timmons (1995) identify three broad groups:

1. *stimulants* temporarily excite neural activity, arouse bodily functions, enhance positive feelings and heighten alertness; in high doses, they cause overt seizures
2. *depressants* (or *sedatives*) depress neural activity, slow down bodily functions, induce calmness and produce sleep; in high doses, they cause unconsciousness
3. *hallucinogens* produce distortion of normal perception and thought processes; in high doses, they can cause episodes of psychotic behaviour (see Chapters 43 and 44).

Table 8.1 Some examples of the major categories of psychoactive drugs

Major category	Examples	Slang name(s)
Depressants (sedatives)	alcohol	
	barbiturates:	'downers', 'barbs', various other names derived from names or colour of pill/capsule (e.g.'blueys').
	tranquillisers:	'tranx'.
	solvents	
Stimulants	caffeine	
	nicotine	
	amphetamines:	'uppers', 'speed', 'sulphate','sulph','whizz'.
	MDMA:	'ecstasy', 'E', and many names derived from shape/colour of drugs.
	cocaine:	'coke', 'snow', 'crack', 'freebase', 'base','wash', 'rock'.
Opiates	morphine:	
	heroin	'junk', 'skag','H', 'smack'.
	codeine	
	methadone:	'amps' (injectable), 'linctus' (oral).
Hallucinogens	lysergic acid diethylamide (LSD):	'acid'.
	mescaline:	
	psilocybin:	'magic mushrooms', 'mushies'.
	phencyclidine (PCP):	'angel dust'.
Cannabis	cannabis sativa:	'pot', 'dope', 'blow', 'draw','smoke'.
	herbal cannabis:	'grass', 'marijuana', 'ganja'.
	cannabis resin:	'weed', 'the herb', 'skunk'.
	cannabis oil:	'hash', 'hashish'.

(Based on Cooper, 1995)

A fourth category is *opiates*. These also depress activity in the CNS, but have an *analgesic* property – that is, they reduce sensitivity to pain without loss of consciousness. The Royal College of Psychiatrists (1987) identified *minor tranquillisers* as a separate category, but in Table 8.1 (page 128) they've been included under the general category of depressants. *Cannabis* doesn't fall easily into any of these other categories.

THE EFFECTS OF DRUGS

According to Greenfield (in Ahuja, 2000):

> As a person, you are the configuration of your brain cells ... Drugs are specifically designed to alter that configuration. So when you blow your mind on drugs, you really are blowing your mind. They may not kill you, but they may dramatically alter the person you are ...

Children and teenagers, whose relatively malleable brains are still being moulded, are particularly vulnerable (see Chapter 4). Teenagers, for various social and cultural reasons, are especially likely to take drugs, including those that pose the greatest threat to physical and mental health (see Chapter 37).

Depressants

Alcohol

Despite the difficulties in assessing the relationship between level of intake and harmful effects, certain '*safe levels*' are widely accepted (Gelder *et al.*, 1999). These are expressed in terms of *units* of alcohol, which is equal to eight grammes of ethanol (the equivalent of half a pint of beer, a small glass of wine, a glass of sherry or a standard (pub) measure of spirits).

For *men*, up to *21 units* per week, and for *women*, up to *14 units* is considered safe, provided the whole amount isn't taken all at once and that there are occasional drink-free days. Anything over 50 and 35 units, respectively, is considered '*dangerous*'. The British legal driving blood alcohol limit is 80 mg per 100 ml (equivalent to two or three drinks).

How does alcohol affect us?

ASK YOURSELF...

- Either from your own experience, or from observing others, how would you describe the effects of alcohol?

According to Motluk (1999), it's possible to identify a number of stages, based on the amount of alcohol consumed.

- With our first drink, and with blood alcohol levels remaining fairly low, *stimulation* is the first effect. At these low levels, alcohol sensitises one of the brain's major excitatory message pathways, the *N*-methyl-*D*-aspartate (NMDA) system (not to be confused with ecstasy). This makes certain NMDA receptors more readily activated by the brain's main neurotransmitter, glutamate. Some of the most sensitised brain regions are the cortex (thinking), hippocampus (remembering) and nucleus accumbens (NA) (pleasure-seeking), and our inhibitions begin to decrease.
- After two or three drinks, alpha rhythms (see Chapter 7) increase, extra blood flows to the prefrontal cortex and to the right temporal cortex. Mood is heightened and we may even feel euphoric.
- After three or four drinks, a turning point is reached, reflecting the complex 'biphasic' relationship with alcohol. With our blood now awash with alcohol, the very NMDA receptors that helped to perk us up after just one drink are refusing to respond. Also, the brain's *gamma-aminobutyric acid* (GABA) *system* becomes activated. GABA is an *inhibitory* neurotransmitter (see Table 4.1, page 58), which dulls activity (it's the system activated by benzodiazepines, such as Valium: see Chapter 45). From this point, alcohol begins to act more like a *depressant/sedative*. The hippocampus and thalamus are both slowed down.
- Any more drinks, and our speech and other motor functions begin to fail us. The cerebellum seems to be most affected by this stage. A common experience is that the room is spinning. This is called *positional alcohol nystagmus*, a booze-induced version of an eye reflex normally triggered by the inner ear's balance organs when they detect head rotation (Motluk, 1999: see Chapter 5).
- A blood alcohol concentration of 500 mg per 100 ml is considered lethal. At this concentration, the brain centres that keep us breathing shut down.

Box 8.3 Some physiological effects of alcohol

- Ethanol is a *diuretic*, so you end up *expelling* more water than you drink. It acts on the pituitary gland, blocking production of the hormone *vasopressin*, which directs the kidneys to re-absorb water that would otherwise end up in the bladder. So, the body borrows water from other places, including the brain, which shrinks temporarily. Though the brain itself cannot experience pain, it's thought that dehydration shrivels the *dura* (a membrane covering the brain). As this happens, it tugs at pain-sensitive filaments connecting it to the skull. Water loss may also account for pains elsewhere in the body.
- Frequent trips to the toilet also result in loss of essential sodium and potassium ions, which are central to how nerves and muscles work (see Chapter 4). Subtle chemical imbalances caused by ion depletion could account for a cluster of symptoms, including headaches, nausea and fatigue.

- Alcohol also depletes our reserves of sugar, leading to hypoglycaemia. The body's store of energy-rich glycogen in the liver is broken down into glucose; this quickly becomes another constituent of urine. This can account for feelings of weakness and unsteadiness the morning after.

(Source: based on *New Scientist*, 1999)

Heavy drinkers suffer malnutrition. Since alcohol is high in calories, appetite is suppressed. It also causes vitamin deficiency, by interfering with absorption of vitamin B from the intestines. Long term, this causes brain damage. Other physical effects include liver damage, heart disease, increased risk of a stroke and susceptibility to infections due to a suppressed immune system (see Chapter 12). Women who drink while pregnant can produce babies with *foetal alcohol syndrome* (see Chapter 40).

Alcohol and memory

Alcohol interferes with normal sleep patterns. Although it causes sedation, alcohol also suppresses REM sleep by as much as 20 per cent (see Chapter 7). There also appears to be a link between alcohol-induced sleepiness and memory loss. People who get drunk and then forget what happened have memory impairments similar to those suffered by people with sleep disorders, such as daytime sleepiness (Motluk, 1999).

In both cases, the person cannot recall how they got home, or what happened while at work or at the pub. It's the *transfer* of information into long-term memory that seems to be disrupted. The GABA signals that induce the sleepiness can interfere with both the early and late stages of memory formation (*stimulus registration* and *consolidation*, respectively). Chemicals that mimic GABA can do this, and there are many GABA receptors in the hippocampus. Another memory disorder associated with chronic alcohol consumption is *Korsakoff's syndrome* (see Chapter 17).

Alcohol and sex

Alcohol lowers levels of testosterone, the male sex hormone, in the blood. One of testosterone's functions is to maintain and regulate sex drive, so excessive drinking can explain loss of sexual appetite and/or the inability to 'perform' (that is, get an erection – otherwise known as 'brewer's droop'). While sexual function returns after blood alcohol levels have fallen again, habitual overindulgence over a five- to ten-year period can permanently damage a man's virility (erectile dysfunction and impotence). Even more worrying, alcohol can actually reduce the size of a man's genitalia (Burke, 1999)!

In women, the reverse seems to happen: even a couple of drinks can very quickly *increase* testosterone levels in the blood, thus increasing their libido (making them *more* randy). This is especially marked in women on the pill and non-pill users who are ovulating. However, as with men, chronic heavy women drinkers can suffer loss of libido and performance, as well as infertility (Burke, 1999).

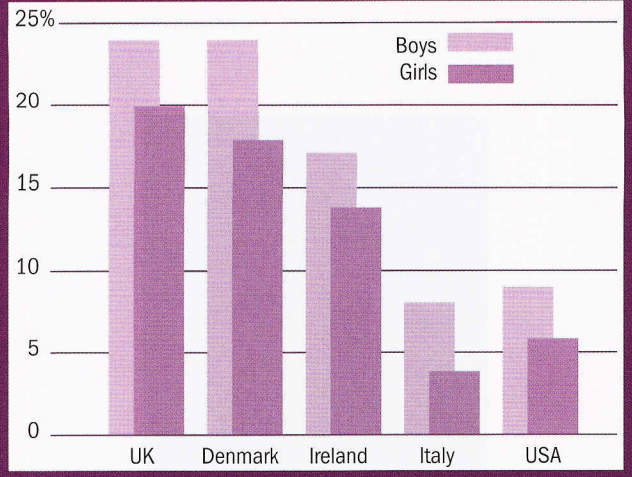
Who drinks, and why?

The heaviest drinkers are young men in their late teens/early twenties, but there have been recent increases among 15–16-year-olds. Fewer women drink dangerous amounts, but rates among women are rising faster than in men, especially those in professional and managerial jobs (Gelder *et al.*, 1999).

A recent Mori poll (in Waterhouse *et al.*, 2000) showed that 17 per cent of those under 25 say they drink in order to get 'trolleyed'. A European School Survey Project on Alcohol and Other Drugs indicates that more than half of 15–16-year-old British teenagers admitted 'binge drinking' in the previous month. Under-16s are drinking twice as much as they were ten years ago (Ahmed, 2004). A UK survey by the Alcohol and Health Research Centre in Edinburgh of more than 2600 school students (2001) revealed that 57 per cent of boys and 54.8 per cent of girls had drunk five or more drinks in a row in the previous 30 days. Among 16–24-year-olds, 38 per cent of men and 21 per cent of women regularly drink twice the recommended daily limit (Waterhouse *et al.*, 2000: see above).

Box 8.4 The influence of socio-economic changes on alcohol consumption

- Alcohol is much more affordable than it used to be. Although the cost of alcohol has increased 22 per cent more than house prices generally since 1976, households' disposable income has risen by 81 per cent in real terms. As Figure 8.3 shows, in the 1960s, the British drank the equivalent of about 4.5 litres of pure alcohol per head per year (compared with 7.5 litres in 1998).
- The alcohol industry is at least partly to blame for the increase in drinking among young people. Responding to a decline in traditional beer drinking, it has created a 'postmodern market', tempting young people to drink strong, designer drinks in glitzy theme bars. From 1978–98, the number of pubs and bars in England and Wales rose by 16 per cent to 78,000, and nightclubs by 25 per cent to 4000 (Waterhouse *et al.*, 2000). New-style 'drinking warehouses' and superpubs are encouraging a growing culture of drinking to excess (Ahmed, 2004).
- Another reason for the increase is the trend towards 'extended youth'. Puberty starts earlier (see Chapter 37), and men and women are postponing both marriage and having children, creating a state of 'perpetual adolescence' (see Chapter 38).



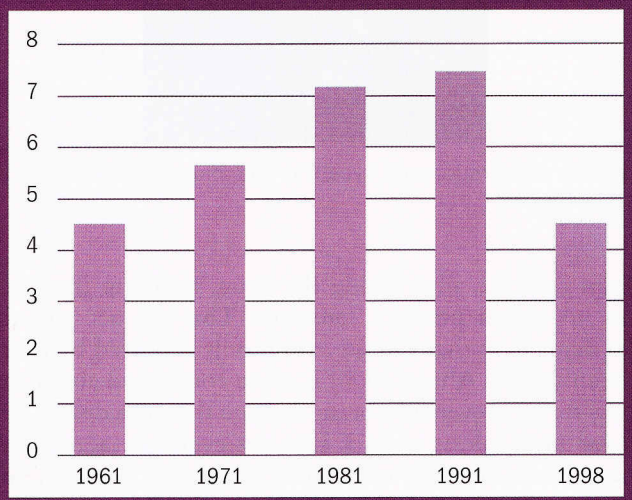


Figure 8.3 (above) Percentages of boys and girls drunk three times in the last 30 days; (below) Litres of pure alcohol drunk per head per year (UK) (from 'Young people are drinking to "get trolleyed" like never before', by Rosie Waterhouse, Mark Macaskill and Senay Boztas, © Times Newspapers Ltd, 23 July 2000, reproduced by permission)

Stimulants

Amphetamines

These were first synthesised in the 1920s. Their general effect is to increase energy and enhance self-confidence. For this reason, they were used extensively by the military in the Second World War to reduce fatigue and give soldiers going into battle more confidence. Amphetamines also suppress appetite and are hence the main ingredient of 'slimming pills' such as Methedrine, Dexedrine and Benzedrine.

Amphetamines are swallowed in pill form, inhaled through the nose in powder form or injected in liquid form. Small amounts cause increased wakefulness, alertness and arousal. Users experience a sense of energy and confidence, and feel that any problem can be solved and any task accomplished. Once the drug wears off, users experience a 'crash' or 'hangover', characterised by extreme fatigue and depression, irritability, disorientation and agitated motor activity. They counteract this by taking the drug again. Large amounts can cause restlessness, hallucinations and *paranoid delusions* (or *amphetamine psychosis*), which is virtually indistinguishable from *paranoid schizophrenia* (see Chapter 44). Long-term use has also been linked with severe depression, suicidal tendencies, disrupted thinking and brain damage.

Tolerance and *psychological dependence* develop quickly. The amphetamine 'hangover' is indicative of *withdrawal*, suggesting that there's also *physiological dependence*.

Cocaine

Cocaine hydrochloride is a powerful CNS stimulant extracted from the leaves of the coca shrub, native to the Andes mountains in South America. The Peruvian Indians originally discovered that chewing the leaves could increase stamina and relieve fatigue and hunger. While they still chew the leaves, elsewhere in the world cocaine is inhaled in powder form, injected into the veins in liquid form or smoked. When smoked, the drug reaches the brain in five to ten seconds, much faster than the other methods. It can also be swallowed, rubbed on the gums or blown into the throat.

In general the effects of cocaine are similar to those of amphetamines, but they tend to last only 15–30 minutes (compared with several hours). Typically, the user experiences a state of euphoria, deadening of pain, increased self-confidence, energy and attention. There's also a 'crash' when the drug wears off.

Even in small amounts, the stimulating effects can cause cardiac arrest and death. Recent research suggests that young people who use cocaine (and amphetamines) may be increasing their risk of having a stroke (brain haemorrhage) (Laurance, 2000). The growing pandemic of cocaine use in western society is overshadowing the traditional risk factors for stroke, such as high blood pressure. This is much more common in older people, as are strokes, but it's becoming increasingly common for people under 30 to suffer strokes after taking drugs.

Cocaine (and amphetamines) produces a surge in blood pressure. People with abnormal blood vessels in their brain, such as a cerebral aneurysm, are at greatest risk. But, it's also possible that the drug-taking caused the deformed blood vessels (Laurance, 2000). Repeated inhalation constricts the blood vessels in the nose. The nasal septum may become perforated, necessitating cosmetic surgery.

Formication refers to the sensation that 'insects' ('coke bugs') are crawling beneath the skin. Although this is merely random neural activity, users sometimes try to remove the imaginary insects by cutting deep into their skin. Cocaine definitely produces *psychological dependence*, but there's much more doubt regarding *physiological dependence*, *tolerance* and *withdrawal*.

Both amphetamines and cocaine increase ANS activity. Increased brain activation is probably due to secretion of increased levels of noradrenaline and

dopamine, whose re-uptake is then inhibited (see Chapter 4). This results in an excess of these neurotransmitters, which increases neuronal activity, producing a persistent state of arousal. Dopamine probably accounts for the euphoric effect, while noradrenaline explains the increased energy. Cocaine stimulates neural circuits that are normally triggered by reinforcing events such as eating or sex. The 'crash' is caused by the fairly sudden depletion of dopamine and noradrenaline.

Box 8.5 Crack

- *Crack* is a form of cocaine, which first appeared in the 1980s.
- It's made using cocaine hydrochloride, ammonia or baking soda and water. When heated, the ammonia or baking soda produces a 'cracking' sound. The result is a crystal, which has had the hydrochloride base removed (hence the term *free basing* to describe its production).
- Its effects are more rapid and intense than cocaine's, but the 'crash' is also more intense.

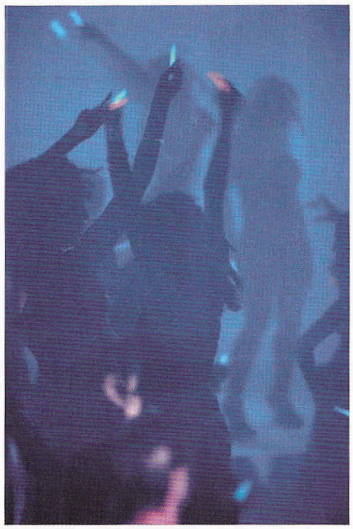
Unlike heroin-dependent people, most cocaine users will get over their drug problem *without* professional help (Hammersley, 1999).

MDMA

MDMA, or 'ecstasy', is a chemical relative of amphetamine, first synthesised in 1912, and later patented as an appetite suppressant (but never marketed). It's swallowed in pill or tablet form, and sometimes taken with other mood-altering drugs. Small amounts produce a mild euphoric 'rush', which can last for up to ten hours. Self- and sexual confidence are increased. Serotonin and dopamine are the neurotransmitters affected.

Ecstasy causes extreme dehydration and hyperthermia, which induces a form of heatstroke. This can produce convulsions, collapse and death. Blood pressure also rises dangerously, which can induce a stroke and permanent brain damage. Over 50 deaths in Britain alone have been attributed to the drug (Parrott, 1997), including the much-publicised case of Leah Betts in 1995.

Most users will suffer mild side-effects. For a small minority, the side-effects can include severe depression, anxiety, paranoia, hallucinations, psychosis and panic attacks. But it's difficult in practice to establish a cause-and-effect link between ecstasy and these mental and physical reactions. The drug is taken mainly at raves and in clubs, where large numbers of sweaty people are in close proximity for hours on end. These conditions clearly make heatstroke more likely, without any drug-taking being involved. Clubbers take impure drugs and they take cocktails of drugs (which may include amphetamines: Naylor, 1988). Clubbers have been warned recently against the use of GBH (gamma hydroxybutyrate or 'liquid ecstasy'), especially when mixed with alcohol. It's not actually illegal and is relatively cheap. Overdoses are common, and it can cause convulsions and coma (Laurance, 2000).



Extreme dehydration and hyperthermia, plus MDMA, can be a lethal cocktail

Brain cells die after taking the drug, meaning that they can no longer produce serotonin. This can account for the depression that is quite commonly reported by users. Greenfield (in Ahuja, 2000) is more concerned about this long-term, irreversible, brain damage than the deaths that occur from taking ecstasy. But not everyone agrees that these brain changes necessarily constitute damage, and the drug may only induce depression (and other mental health problems) in those who already have emotional difficulties (Naylor, 1988). According to the Department of Health (1994), *tolerance* occurs, but not *physiological dependence*.

Opiates

These are derived from the unripe seed pods of the opium poppy ('plant of joy'). One constituent of opium is *morphine*, from which *codeine* and *heroin* can be extracted.

Morphine and heroin

In general, the opiates depress neural functioning and suppress physical sensations and responses to stimulation. In Europe, *morphine* was first used as an analgesic during the Franco-Prussian War (1870–71). However, it quickly became apparent that it produced physiological dependence (the 'soldier's disease'). The German Bayer Company developed *heroin* (the 'hero' that would cure the 'soldier's disease') in order to prevent this dependence, but, unfortunately, it also causes physiological dependence and has many unpleasant side-effects.

Heroin can be smoked, inhaled or injected intravenously. Puffing the heated white powder ('chasing the

dragon') is now the preferred method because syringes are seen as dirty and dangerous (Khan, 2003). The immediate effects (the 'rush') are described as an overwhelming sensation of pleasure, similar to sexual orgasm but affecting the whole body. Such effects are so pleasurable that they override any thoughts of food or sex. Heroin rapidly decomposes into morphine, producing feelings of euphoria, well-being, relaxation and drowsiness.

Long-term users become more aggressive and socially isolated, as well as less physically active. Opiates in general may damage the body's immune system, leading to increased susceptibility to infection. The impurity of the heroin used, users' lack of adequate diet and the risks from contaminated needles, all increase health risks. Overdoses are common.



River Phoenix (1970–1993), victim of a cocktail of drugs

Heroin produces both *physiological* and *psychological dependence*. *Tolerance* develops quickly. *Withdrawal symptoms* initially involve flu-like symptoms, progressing to tremors, stomach cramps, and alternating chills and sweats. Rapid pulse, high blood pressure, insomnia and diarrhoea also occur. The skin often breaks out into goosebumps, where the skin resembles that of a plucked turkey (hence the term *cold turkey* to describe attempts to abstain). The legs jerk uncontrollably (hence *kicking the habit*). These symptoms last about a week, reaching a peak after about 48 hours.

Box 8.6 Heroin and endorphins

- As we saw in Chapter 4, the brain produces its own opiates (*opioid peptides* or *endorphins*).
- When we engage in important survival behaviours, endorphins are released into the fluid that bathes neurons. Endorphin molecules stimulate *opiate receptors* on some neurons, producing an intensely pleasurable effect just like that reported by heroin users.
- Regular use of opiates overloads endorphin sites in the brain, and the brain stops producing its own endorphins (Snyder, 1977). When the user abstains, neither the naturally occurring endorphins nor the opiates are available. Consequently, the internal mechanism for regulating pain is severely disrupted, producing some of the withdrawal symptoms described earlier.

Methadone

This is a synthetic opiate (or opioid) created to treat *physiological dependence* on heroin and other opiates. Methadone acts more slowly than heroin, and doesn't produce the heroin 'rush'. While heroin users may be less likely to take heroin if they're on methadone, they're likely to become at least *psychologically dependent* on it. By the early 1980s, long-term prescribing of methadone (methadone maintenance) began to be questioned, both in terms of effectiveness and the message it conveyed to users.

However, the HIV/AIDS epidemic has made harm minimisation a priority. The dispensing of injecting equipment and condoms in 'needle exchange' schemes has been combined with attempts to persuade users to substitute oral methadone for intravenous heroin. This reduces the risk of transmitting both HIV and other blood-borne viruses, such as hepatitis B (Lipsedge, 1997a).

Hallucinogens

These produce the most profound effects on consciousness. This is why they're sometimes called *psychedelics* ('mind expanding'). *Mescaline* comes from the peyote cactus, while *psilocybin* is obtained from the mushroom *psilocybe mexicana*. LSD and PCP are both chemically synthesised (see Table 8.1).

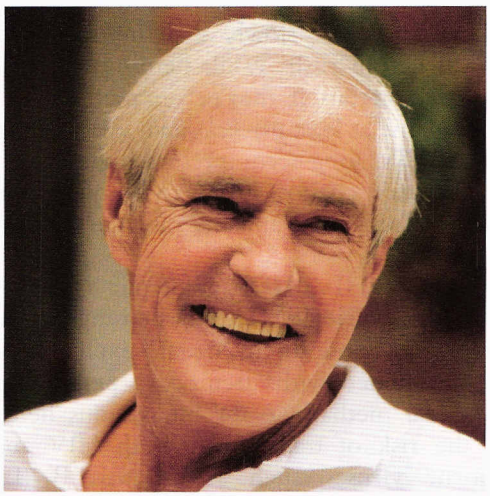
LSD

First produced in the 1940s, LSD was used during the 1960s for a variety of medical purposes, including pain relief for the terminally ill. But it became widely known during that period – and widely used – as a recreational drug. This use of LSD was largely inspired by Timothy Leary, a Harvard University psychologist, who coined the slogan 'turn on, tune in and drop out'. LSD, peace and love were central to the 1960s hippy movement ('flower power').

LSD is usually impregnated on blotting paper and swallowed. Unlike other drugs, its effects may not appear until an hour or so after being taken. These include:

- distorted sensory experiences, such as the intensification of sights and sounds, and changing form and colour; this can be pleasurable or terrifying (a 'bad trip'), depending on mood and expectations
- the dramatic slowing down of subjective time

- *synaesthesia* – the blending of different sensory experiences – for example, music may be experienced visually (see Chapter 5)
- *depersonalisation* – a state in which the body is perceived as being separate from the self; users report being able to see themselves from afar, similar to out-of-body experiences (see Chapter 6)
- *flashbacks* – some long-term users experience distorted perceptions or hallucinations days or weeks after the drug was taken; these might be psychological or physiological in origin.



Timothy Leary (1920–1996)

There's no evidence of *physiological dependence* or *withdrawal*, but *tolerance* can develop quickly. If taken repeatedly, there are few effects until a week or so after the drug was last taken. Whether LSD produces *psychological dependence* is disputed.

PCP

This was first synthesised in the 1950s for use as a surgical anaesthetic, but this was stopped once its psychoactive side-effects became apparent. It's usually combined with tobacco and smoked, producing distortions in body image and depersonalisation.

Used in small amounts, it induces euphoria, heightened awareness and a sense that all problems have disappeared. In larger quantities, it has stimulant, depressant and (not surprisingly given its original purpose) analgesic properties. Effects include violence, panic, psychotic behaviour, disrupted motor activity and chronic depression. These may persist for weeks after the drug was last taken.

Long-term use is associated with the four 'Cs' (Smith *et al.*, 1978):

1. *combativeness* – agitated or violent behaviour
2. *catatonia* – muscular rigidity of the body
3. *convulsions* – epileptic-type seizures
4. *coma* – a deep, unresponsive sleep.

Although PCP doesn't produce *physiological dependence*, users may become *psychologically dependent*.

Cannabis

This is second only to alcohol in popularity. The *cannabis sativa* plant's psychoactive ingredient is *delta-9-tetrahydrocannabinil* (THC). THC is found in the branches and leaves of the male and female plants (*marijuana*), but is highly concentrated in the resin of the female plant. *Hashish* is derived from the sticky resin and is more potent than marijuana (see Table 8.1).

Cannabis is usually smoked with tobacco, or eaten. When smoked, THC reaches the brain within seven seconds. Small amounts produce a mild, pleasurable 'high', involving relaxation, a loss of social inhibition, intoxication and a humorous mood. Speech becomes slurred and coordination is impaired. Increased heart rate, reduced concentration, enhanced appetite and impaired short-term memory are also quite common effects. Some users report fear, anxiety and confusion.

Large amounts produce hallucinogenic reactions, but these aren't full blown as with LSD. THC remains in the body for up to a month, and both male sex hormones and the female menstrual cycle can be disrupted. If used during pregnancy, the foetus may fail to grow properly, and cannabis is more dangerous to the throat and lungs than cigarettes. While tolerance is usually a sign of physiological dependence, with cannabis *reverse tolerance* has been reported: regular use leads to a *lowering* of the amount needed to produce the initial effects. This could be due to a build-up of THC, which takes a long time to be metabolised. Alternatively, users may become more efficient inhalers, and so perceive the drug's effects more quickly. *Withdrawal* effects (restlessness, irritability and insomnia) have been reported, but they seem to be associated only with continuous use of very large amounts. *Psychological dependence* almost certainly occurs in at least some people.

ASK YOURSELF...

- Do you agree with the reclassification of cannabis?
- Do you think it should be legalised (decriminalised)?
- Why/why not?

CRITICAL DISCUSSION 8.2: Cannabis and the drugs debate

- According to Skelton (in Naylor, 1988), coordinator of the Edinburgh drugs agency Crew 2000:

  ... Up until a few years ago, if anybody went to a drugs project and said they had a problem with cannabis then they wouldn't be taken seriously ... This has changed quite

a bit. People are recognising that there are side-effects, particularly for people who've got any sort of mental illness.

- Greenfield (in Ahuja, 2000) considers cannabis to be pretty potent. It takes 0.3 mg to induce the same kind of effects as 7000 mg of alcohol, primarily feelings of well-being and relaxation. This potency suggests that specific cannabis receptors exist in the brain.
- As noted earlier, cannabis was reclassified in the UK in 2004. It was 'reduced' to a Class C drug from Class B (alongside tranquillisers and steroids).
- In 2004, an estimated 3.3 million Britons (one in ten 16–59-year-olds) will have used the drug. A quarter of 15–24-year-olds used it in 2002 (Burke & Asthana, 2004).
- Research by leading British psychiatrists has pointed to a strong link between cannabis and increased risk of mental illness (as well as exacerbation of existing psychotic conditions). Research in the USA has shown that THC can induce a psychotic reaction. While these studies don't prove that cannabis is harmful for everyone, it's difficult to say that it's 'harmless'. Some experts have compared the risks to the link between smoking and lung cancer/heart disease: it's safer to abstain but vulnerable people are at greater risk. The number of people who are vulnerable to the effects of cannabis is probably tiny (Burke & Asthana, 2004).
- The debate about the 'morality' of cannabis use, its eventual legalisation, and its physical and psychological effects, goes on.

THEORIES OF DEPENDENCE

According to Lowe (1995):

... It is now generally agreed that addictive behaviours are multiply determined phenomena, and should be considered as biopsychosocial entities.

Similarly, Hammersley (1999) maintains that dependence is a complex behaviour that takes several years to develop. So it's unlikely that one theory or factor could account for all of it. Most researchers believe that social, personal, family and lifestyle factors are important, as well as the action of the drug itself. However, it's not yet understood fully how these work and interact. According to Hammersley (1999), theories of dependence have two dimensions. These are concerned with the extent to which dependence is:

- supposedly caused by *biological*, as opposed to *social*, factors
- the result of *abnormal/pathological* processes, as opposed to the *extreme end* of *normal* processes.

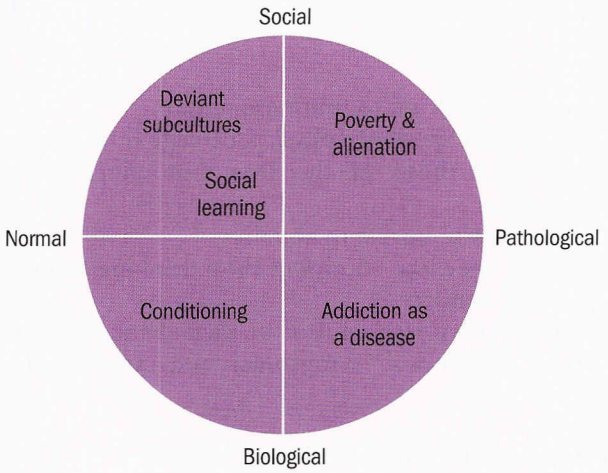


Figure 8.4 Five main theories of addiction (from Hammersley, 1999)

In the rest of this section, we shall consider one major theory (*addiction as a disease*) of one particular case of substance dependence (*alcohol dependence*).

Theories of alcohol dependence

The disease model

Rush, widely regarded as the father of American psychiatry, is commonly credited with being the first major figure to conceptualise alcoholism as a 'disease', in the early 1800s. At about the same time, the British doctor, Trotter, likened alcoholism to a mental disorder. Both men saw it as a product of a distinct biological defect or dysfunction, much like cancer, diabetes or TB (Lilienfeld, 1995).

In 1935, a doctor and former alcoholic, Smith, and Wilson (a stockbroker) founded Alcoholics Anonymous (AA) in the USA. AA assumes that certain individuals possess a physiological susceptibility to alcohol analogous to an allergy: a single drink is sufficient to trigger an unquenchable desire for more, resulting in an inevitable loss of control.

Perhaps the most influential champion of the disease model was Jellinek, a physiologist. Based on questionnaire data with AA members, Jellinek (1946, 1952) proposed that alcoholism was a biological illness with a highly characteristic and predictable course. It comprises four major stages:

1. *pre-alcoholic phase* – alcohol provides a means of reducing tension and increasing self-confidence
2. *prodromal phase* – the alcoholic begins to drink secretly and heavily, and to experience *blackouts*
3. *crucial phase* – the alcoholic begins to lose control, engage in 'benders' and to experience severe withdrawal symptoms
4. *chronic phase* – the alcoholic drinks almost constantly and neglects almost all social and occupational responsibilities.

Jellinek (1960) also distinguished five 'species' of alcoholics:

1. *alpha* – they drink to minimise tension
2. *beta* – they experience physical damage from drinking, such as cirrhosis of the liver, but aren't alcohol-dependent
3. *delta* – they're unable to abstain
4. *epsilon* – they lose control of their drinking and go on periodic benders
5. *gamma* – they lose control of their drinking, experience withdrawal symptoms, and are physically dependent.

Evaluating the disease model

According to Lilienfeld (1995), the course of alcoholism appears to be far more variable than this, and many drinkers don't fit into any of Jellinek's 'species'. Nevertheless, his research was instrumental in persuading many scientists that alcoholism is best regarded as a physiological illness with a distinctive natural history.

This was the single most influential theory for much of the twentieth century. It's still the dominant view underlying psychiatric and other medically oriented treatment programmes, but is much less influential among psychologically based programmes since the 1980s.

Peele (1989) lists six major assumptions made by the disease model.

1. alcoholics drink too much, not because they intend to, but because they can't control their drinking
2. alcoholics inherit their alcoholism, and so are born as alcoholics
3. alcoholism as a disease can strike any individual, from any socio-cultural background (it's an 'equal-opportunity destroyer')
4. alcoholism always gets worse without treatment; alcoholics can never cut back or quit on their own
5. treatment based on the AA principles (see Box 8.7) is the *only* effective treatment
6. those who reject the AA principles, or observers who reject any of the above, are in denial.

Peele argues that there's no evidence to support any of these assumptions. Regarding the second assumption, Lilienfeld (1995) observes that it implies that all individuals drink heavily for the same – or at least very similar – reasons. That is:

> ... Alcoholism is often viewed ... as a homogeneous entity resulting from a single set of causal influences...

However, Cloninger (1987) proposed that *Group 1* alcoholics are at risk of 'Type 1' alcoholism:

- they drink primarily to reduce tension, are predominantly female, are prone to anxiety and depression, and tend to have relatively late onset of problem drinking.

By contrast, *Group 2* alcoholics are at risk of 'Type 2' alcoholism:

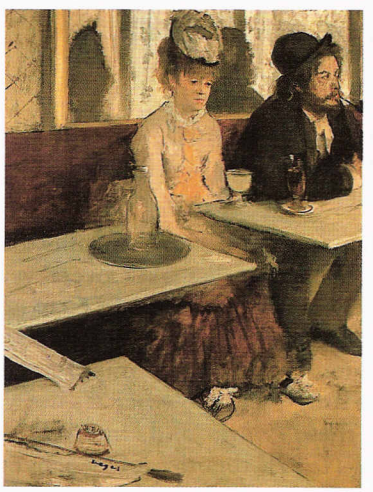
- they drink primarily to relieve boredom, give free rein to their tendency towards risk-taking and sensation-seeking, are predominantly male, prone to antisocial and criminal behaviour, and tend to have relatively early onset of drinking behaviour.

Although the evidence for Cloninger's model is tentative and indirect, it challenges the disease model in a quite fundamental way. If he's correct, alcoholism may represent the culmination of two very different (and, in fact, essentially opposite), pathways (Lilienfeld, 1995).

Alcohol dependence syndrome (ADS: Edwards, 1986) is a later version of the disease model. It grew out of dissatisfaction with 'alcoholism' and with the traditional conception of alcoholism as disease. The term 'syndrome' adds flexibility, suggesting a group of concurrent behaviours that accompany alcohol dependence. They needn't always be observed in the same individual, nor are they observable to the same degree in everyone. For example, instead of loss of control or inability to abstain, ADS describes 'impaired control'. This implies that people drink heavily because, at certain times and for a variety of psychological and physiological reasons, they choose not to exercise control (Lowe, 1995). Lowe maintains that:

> Simple disease models have now been largely replaced by a more complex set of working hypotheses based, not on irreversible physiological processes, but on learning and conditioning, motivation and self-regulation, expectations and attributions.

(See Critical Discussion 8.1, page 124.)



Absinthe, by Degas

Treating alcohol dependence

The AA approach

According to Powell (2000), the more general concept of addiction as a 'disease of the will' has become popular. It's

been broadly applied to other forms of addiction, and is adopted by the AA's 'sister' organisations, Narcotics Anonymous (NA) and Gamblers Anonymous (GA), Workaholics Anonymous (WA), Sex Addicts Anonymous (SAA), and even Survivors of Incest Anonymous.

Strictly, what AA offers isn't 'treatment' at all. Nor does it advocate any particular approach to treatment. Instead, it adopts a spiritual framework, requiring alcoholics to surrender their will to a 'higher power' (or God), confess their wrongs and try to rectify them. This requires some spiritual feeling, an acceptance of abstinence as a goal, and usually works better for those who are heavily dependent (Hammersley, 1999). The AA philosophy is embodied in its famous 12-step approach (see Box 8.7).

Box 8.7 The 12 steps of Alcoholics Anonymous

1. We admitted that we were powerless over alcohol – that our lives had become unmanageable;
2. came to believe that a Power greater than ourselves could restore us to sanity;
3. made a decision to turn our will and our lives over to the care of God as we understood Him;
4. made a searching and fearless moral inventory of ourselves;
5. admitted to God, to ourselves, and to another human being, the exact nature of our wrongs;
6. were entirely ready to have God remove all these defects of character;
7. humbly asked Him to remove our shortcomings;
8. made a list of all persons we had harmed, and became willing to make amends to them all;
9. made direct amends to such people whenever possible, except when to do so would injure them or others;
10. continued to take personal inventory and when we were wrong promptly admitted it;
11. sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.
12. Having had a spiritual awakening as the result of these steps, we tried to carry the message to alcoholics, and to practise these principles in all our affairs.

At meetings, new members are introduced to the 12 steps and the 'Big Book' (of guidance and member stories). They're allocated a sponsor for one-to-one support, listen to other members' stories and tell their own. In addition to the weekly group meetings, there are professional residential programmes that use the 12-step approach (the 'Minnesota Model'). This involves progression through a very structured programme and movement through levels of seniority in a rigid hierarchy. Deviation from the rules is systematically and severely punished by, for example, 'demotion' or even expulsion. Halfway houses are also available to help the person's transition to an alcohol-free life in the community.

Evaluating the AA approach

- The 12 steps seem to work best for those who attend meetings regularly and get actively involved in the organisation. Indeed, this is part of the AA ethos (Hammersley, 1999). Extreme '12-steppers' (recovered AA members) believe that 'it's abstinence or nothing', but the basic philosophy is *neutral* about the issue of whether abstinence is for everyone. Many have benefited from AA, and there are affiliated support groups for spouses (AL-ANON) and for teenage children (AL-TEEN). However, it's certainly not the only treatment available (Hammersley, 1999).
- In recent years, several ex-members and dependence treatment professionals have accused AA of having cult-like qualities, and using brainwashing and bullying methods that weak and vulnerable people are particularly susceptible to. The anti-AA lobby is especially strong in the USA, and there's also a support group on the Internet called Recovery From 12 Steps.
- In the UK, where there are 3350 AA groups, research has found that the 12-step approach has a 70 per cent success rate (Kenny, 1998). One criticism of the approach is that members are encouraged to stay in AA *for life*: once an alcoholic, always an alcoholic. In AA, you can never move on. According to James (in Kenny, 1998):

  > ... After a year with AA, you're like a Moonie and you're probably in a relationship with another AA member ... By the end of your second year, you are definitely cured of your physical addiction, but not the underlying causes – and AA does nothing about this. It merely replaces one dependency with another...

  James describes the AA approach as authoritarian and fascistic. This is very effective when it's getting you to stop taking the drug of your choice. That's clearly the most urgent need initially – you must stop killing yourself. But at some stage – perhaps after being clean for two years – you should move on to therapy. The paternalistic structure is designed to make this break very difficult.
- The issue of complete abstinence discussed earlier is also highly contentious. For some people, this may be appropriate, while others may be able to return to drinking safely and in moderation (Kenny, 1998).

CHAPTER SUMMARY

- Drugs are **psychoactive** substances. They may be used **therapeutically** or for **pleasure**, the latter being subdivided into **recreational** and **drugs of abuse**.
- Which drugs are legal or illegal changes over time within the same society and between societies. Cigarette smoking and alcohol abuse are so widespread that they may be considered 'ordinary addictions'.

- The concept of **addiction** has been criticised for being oversimplified and for reflecting the **disease model**. The more modern view is to see drug problems as involving **substance abuse** and **dependence**. This view is adopted by DSM-IV-TR.
- Some researchers argue that the concept of addiction should be **broadened**, so as to cover forms of addictive behaviour which don't involve chemical substances at all. Examples include shopping, gambling and the Internet. Addictive behaviours may display the same components, regardless of the particular substance or activity involved.
- DSM-IV-TR defines abuse and dependence in terms of several criteria. **Dependence** can be either **psychological** or **physiological**, the latter indicated either by **tolerance** or **withdrawal**. Both types of dependence are part of the **dependence syndrome**.
- Physiologically addictive drugs, such as alcohol and heroin, typically also cause **habituation**. Most widely used recreational drugs, including cannabis, cocaine and ecstasy, produce habituation without causing physiological dependence.
- Major categories of drugs include **depressants** (**sedatives**), **stimulants**, **opiates**, **hallucinogens** (**psychedelics**) and **cannabis**.
- **Alcohol** is a depressant, although its initial effect is to stimulate the brain. With increasing amounts of alcohol, the brain generally slows down, and the breathing centres may eventually shut down.
- Alcohol can produce several life-threatening physical diseases in the drinker, as well as causing **foetal alcohol syndrome**. It also impairs **memory** function, an extreme form being **Korsakoff's syndrome**.
- Stimulants include **amphetamines**, which produce both physiological and psychological dependence, **cocaine**, which definitely causes only psychological dependence, and **MDMA** (or **ecstasy**).
- Ecstasy is associated with raves and clubbing, making it difficult to infer the drug's effect on various mental and physical reactions. While there's disagreement as to whether it causes long-term brain damage, it doesn't seem to induce physiological dependence.
- **Morphine** and **heroin** are opiates. Heroin produces both psychological and physiological dependence, and withdrawal symptoms are severe and extremely unpleasant. It's thought that regular use of opiates causes the brain to stop producing its own **endorphins**.
- **Methadone** is an orally taken synthetic opiate created to treat physiological dependence on heroin and other opiates. Users may well become psychologically dependent.
- **LSD** and **PCP** are hallucinogens, which may produce psychological dependence. Neither produces physiological dependence.
- **Cannabis** doesn't fit neatly into the other categories. It comes in different forms and can be taken in a variety of ways. There's some evidence of **reverse tolerance**, and psychological dependence is likely for some people.
- Cannabis is at the centre of a current debate regarding changes to the drug laws in the UK. While some wish to decriminalise it, others believe this would increase its use.
- **Theories of dependence** differ according to whether they see the causes as **biological** or **social**, and whether dependence is seen as **pathological** or the **extreme end** of **normal processes**.
- The single most influential theory of alcohol dependence is the **disease model**. It's an oversimplified account, assuming that everyone is dependent for the same reasons. Supporting evidence is also very limited. **Alcohol dependence syndrome** (**ADS**) is a more flexible version of the disease model.
- **Alcoholics Anonymous** (**AA**) is based on the disease model. Its '12 steps' philosophy has also been applied to other forms of 'addiction'. While it boasts a high success rate, its methods have been accused of being authoritarian and cult-like. Its core belief that alcoholics cannot be cured prevents people from becoming independent.

Links with other topics/chapters

- Substance abuse and dependence are included in DSM-IV-TR classification of *mental disorders* (Chapter 43), and there are many (non-chemical) addictions that share many of the characteristics of drug addiction, including *eating disorders* (Chapter 44).
- The disease model of addiction is one example of the more general *biomedical model* of disease. *Health psychology* represents a major challenge to the biomedical model, favouring the *biopsychosocial model* of health and illness (Chapter 12).
- Several drugs (such as amphetamines and hallucinogens) can induce *psychotic reactions* (Chapter 44), and an extreme memory disorder associated with chronic alcohol consumption is *Korsakoff's syndrome* (Chapter 17). Alcohol also suppresses *REM sleep* (Chapter 7).
- Increased alcohol consumption among younger people has been related to the trend toward 'perpetual adolescence': *puberty* starts earlier (Chapter 37), and men and women are postponing both *marriage and having children* (Chapter 38).
- The effects of long-term heroin use can be understood in terms of the brain's own *opiates* (*endorphins*) (Chapter 4).
- Cloninger's group 2 alcoholics have a *crime-prone personality* (Chapter 46).

What is motivation?
Maslow's hierarchy of needs
The early study of motivation
Homeostatic drive theory
Hunger and eating
Does hunger cause eating?
What prompts us to eat?
Set point or settling point?
Other factors that influence eating
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9

MOTIVATION



INTRODUCTION AND OVERVIEW

Trying to define motivation is a little like trying to define psychology itself. Taking as a starting point the lay person's view of psychology as the study of 'what makes people tick', motivation is concerned with why people act and think the way they do. 'Why' questions – and related 'how' questions – usually imply *causes* and *underlying mechanisms or processes*.

Each of the major theoretical approaches discussed in Chapter 2 (*behaviourist*, *psychodynamic*, *humanistic*, *neurobiological/biogenic*, *cognitive*, *evolutionary* and *social constructionist*) tries to identify the key processes and mechanisms. This is also true of the *neurobiological/biogenic* approach (see Chapter 4). At the heart of each approach lies an image of human beings that, in essence, is a theory of the causes of human behaviour.

Motivated behaviour is *goal-directed*, purposeful behaviour. It's difficult to think of any behaviour, human or non-human, that isn't motivated in this sense. However, just how the underlying motives are conceptualised and investigated depends very much on the persuasion of the psychologist. For example:

- a *psychodynamic* psychologist will try to discover internal, *unconscious* drives and motives (see Chapter 42 for a discussion of Freud's psychoanalytic theory)
- a *behaviourist* psychologist will look for environmental *schedules of reinforcement*, which can explain the behaviour of rats and pigeons as effectively as that of human beings (see Chapter 11); as a *radical behaviourist*, Skinner rejects the claim that mental or other internal events or processes – conscious or unconscious – can influence behaviour in any way. For him, 'motivation' and other mentalistic terms are '*explanatory fictions*'
- a *humanistic* psychologist, such as Maslow, will try to understand a person's behaviour in terms of a hierarchy of motives, with *self-actualisation* at the top of the hierarchy
- for a *biopsychologist*, what's crucial are bodily events and processes taking place in the CNS, the ANS and the endocrine system, or *interactions* between these different systems (see Chapter 4); these events and processes are related to the person or animal's biological survival.

Although we shall consider a range of different motives, this chapter has a very 'biological' flavour. Maslow's *hierarchy of needs* is useful as a general framework for examining other approaches. *Homeostatic drive theories* try to explain hunger and thirst, but even in the case of such basic biological motives as these, *cognitive* and other individual factors, as well as *social*, *cultural* and other environmental factors, play a crucial role.

We shall also consider *non-homeostatic* needs and drives, including electrical self-stimulation of the brain (ES-SB), competence and cognitive motives, and some important *social* motives.

WHAT IS MOTIVATION?

According to Rubin & McNeil (1983), motives are a special kind of cause that 'energize, direct and sustain a person's behaviour (including hunger, thirst, sex and curiosity)'. Similarly:

> Motivation refers, in a general sense, to processes involved in the initiation, direction, and energization of individual behaviour ... (Geen, 1995)

The word 'motive' comes from the Latin for 'move' (*movere*), and this is captured in Miller's (1962) definition:

> The study of motivation is the study of all those pushes and prods – biological, social and psychological – that defeat our laziness and move us, either eagerly or reluctantly, to action.

As we noted in the *Introduction and overview*, different schools of thought within psychology look for the causes of behaviour in very different 'places'. These differences indicate that motives may vary with regard to a number of features or dimensions, including:

- internal or external
- innate or learned
- mechanistic or cognitive
- conscious or unconscious.

Several attempts have been made to classify different kinds of motives. For example, Rubin & McNeil (1983) classify motives into (i) survival or physiological motives, and (ii) competence or cognitive motives. Social motives represent a third category. Clearly, humans share survival motives with all other animals, as well as certain competence motives (see below). But other motives are peculiarly and uniquely human, notably *self-actualisation*, which lies at the peak of a 'hierarchy of needs' in Maslow's (1954) humanistic theory.

Maslow's hierarchy of needs

Although Maslow's theory is commonly discussed in relation to personality (see Chapter 42), its focus on needs makes it equally relevant to motivation. (The book in which he first proposed his hierarchy was called *Motivation and Personality*.) According to Maslow, we're subject to two quite different sets of motivational states or forces:

1. those that ensure survival by satisfying basic physical and psychological needs (physiological, safety, love and belongingness, and esteem), and
2. those that promote the person's self-actualisation – that is, realising one's full potential, 'becoming everything that one is capable of becoming' (Maslow, 1970), especially in the intellectual and creative domains.

As Maslow states:

> We share the need for food with all living things, the need for love with (perhaps) the higher apes, [and] the need for Self-Actualisation with [no other species].

Behaviours that relate to survival or deficiency needs (*deficiency* or *D-motives*) are engaged in because they satisfy those needs (a *means to an end*). But those that relate to self-actualisation are engaged in for their own sake, because they're intrinsically satisfying (*growth*, *being* or *B-motives*). The latter include the fulfilment of ambitions, the acquisition of admired skills, the steady increase of understanding about people, the universe or oneself, the development of creativeness in a particular field or, most important, simply the ambition to be a good human being. It's simply inaccurate to speak in such instances of tension reduction, which implies the overcoming of an annoying state, for these states aren't annoying (Maslow,

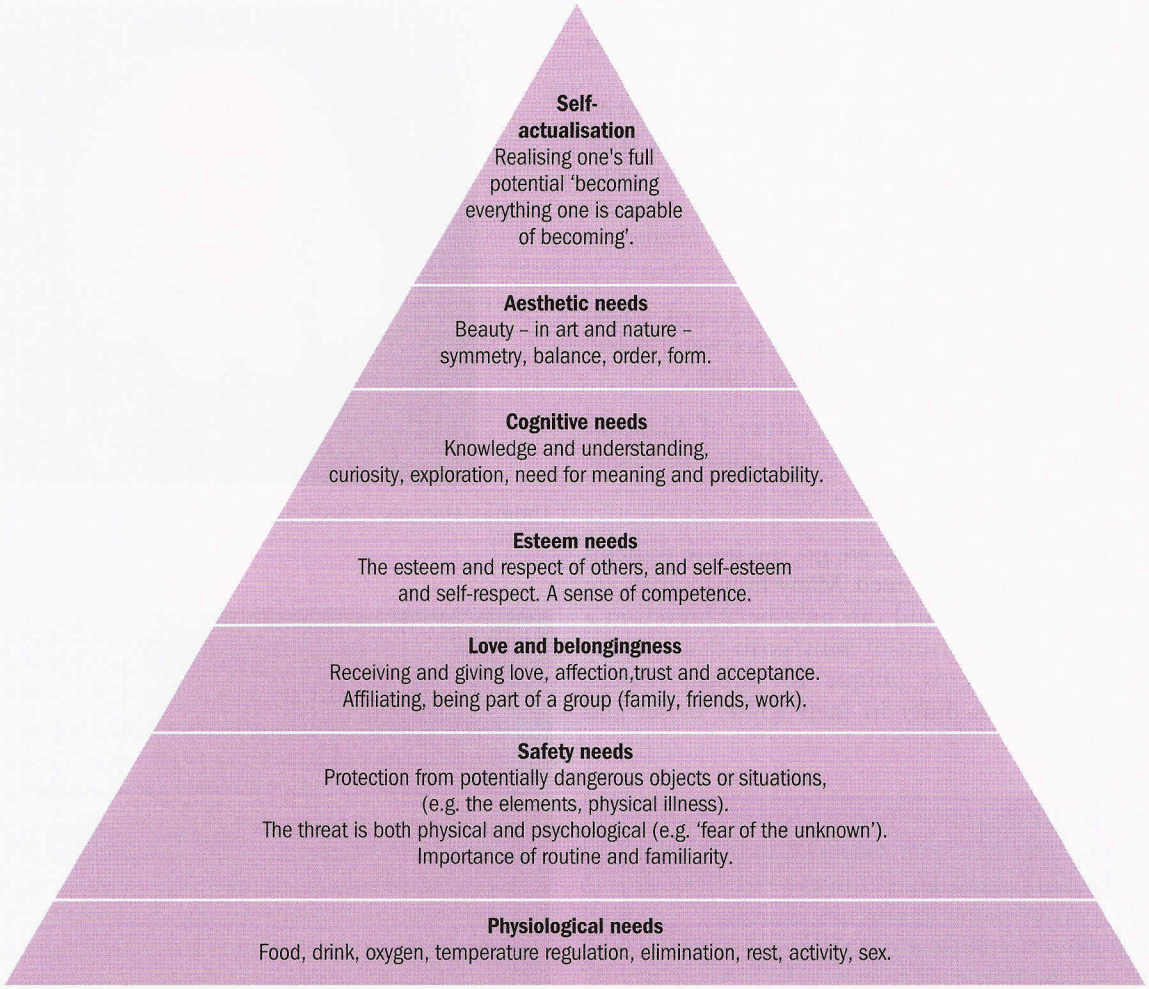
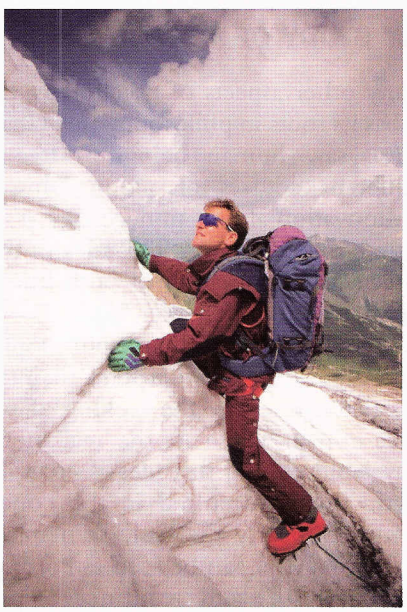


Figure 9.1 Maslow's hierarchy of needs (based on Maslow, 1954)

1968). (Another term for tension reduction is *drive reduction*, which is discussed below). Maslow's argument is that to reduce the full range of human motives to drives, which must be satisfied or removed, is simply mistaken.

The hierarchical nature of Maslow's theory is intended to highlight the following points.

- Needs lower down in the hierarchy must be satisfied before we can attend to needs higher up. For example, if you're reading this while your stomach is trying to tell you it's lunchtime, you probably won't absorb much about Maslow. Similarly if you're tired or in pain. Yet you can probably think of exceptions, such as the starving artist who finds inspiration despite hunger, or the mountain climber who risks his/her life for the sake of adventure (what Maslow would call a 'peak' experience – if you'll forgive the pun!).
- Higher-level needs are a later evolutionary development: in the development of the human species (*phylogenesis*), self-actualisation is a fairly recent need. This applies equally to the development of individuals (*ontogenesis*): babies are much more concerned with



'Because it's there'

their bellies than with their brains. But it's always a case of one need *predominating* at any one time, *not* excluding all other needs.

- The higher up the hierarchy we go, the more the need becomes linked to life experience, and the less 'biological' it becomes. Individuals will achieve self-actualisation in different ways, through different activities and by different routes. This is related to experience, not biology:

> A musician must make music, an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be. (Maslow, 1968)

This captures nicely the *idiographic* nature of Maslow's theory – that is, the view that every individual is unique (see Chapter 42).

- The higher up the hierarchy we go, the more difficult it becomes to achieve the need. Many human goals are remote and long term, and can only be achieved in a series of steps. This pursuit of aims/goals that lie very much in the future is unique to human beings, although individuals differ in their ability to set and realise such goals.

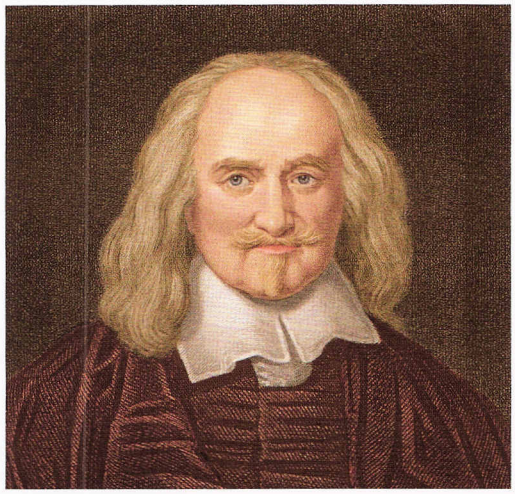
ASK YOURSELF...

- Do you consider Maslow's hierarchy to be a useful way of thinking about human motivation? Do you think he's omitted any important motives?
- To what extent might the hierarchy reflect the culture and the historical time in which Maslow lived and wrote?

THE EARLY STUDY OF MOTIVATION

As with many other aspects of psychology, the study of motivation has its roots in philosophy (see Chapters 1 and 3). *Rationalists* saw human beings as free to choose between different courses of action. This makes the concept of motivation almost unnecessary: it's our reason that determines our behaviour. This idea of freedom and responsibility is a basic premise of both humanistic and cognitive approaches (see Chapter 49).

The seventeenth-century British philosopher Hobbes proposed the theory of *hedonism*. This maintains that all behaviour is determined by the seeking of pleasure and the avoidance of pain. These are the 'real' motives (whatever we may believe), and this idea is central to Freud's psychoanalytic theory, captured in the concept of the *pleasure principle*. Similarly, the basic principles of *positive* and *negative reinforcement* can be seen as corresponding to the seeking of pleasure and avoidance of pain, respectively, and these are central to Skinner's *operant conditioning*.



Thomas Hobbes (1588–1679)

Box 9.1 Motives as instincts

- The concept of instinct played a major role in early psychological approaches to motivation. Many psychologists, inspired by Darwin's (1859) theory of evolution (see Chapter 2), which argued that humans and animals differ only *quantitatively*, identified human instincts that would explain human behaviour.
- For example, McDougall (1908) originally proposed 12 and, by 1924, over 800 separate instincts. But to explain behaviour by labelling it is to explain nothing (e.g. 'We behave aggressively because of our aggressive instinct' is a circular statement). This, combined with the sheer proliferation of instincts, seriously undermined the whole approach.
- However, the concept of instinct – with certain important modifications – remains a central feature of the *ethological approach* to behaviour, in particular, non-human animal behaviour (see Chapter 2 and Gross *et al.*, 2000).

During the 1920s, the concept of instinct was largely replaced by the concept of *drive*. The term was first used by Woodworth (1918), who compared human behaviour with the operation of a machine: the mechanism of a machine is relatively passive and drive is the power applied to make it 'go'. The concept of drive has taken two major forms: *homeostatic drive theory* (Cannon, 1929), which is a physiological theory, and *drive reduction theory* (Hull, 1943), which is primarily a theory of learning.

HOMEOSTATIC DRIVE THEORY

The term *homeostasis* is derived from the Greek *homos* (meaning 'same') and *stasis* (meaning 'stoppage'). It was coined by Cannon (1929) to refer to the process by which an organism maintains a fairly constant internal

(bodily) environment – that is, how body temperature, blood sugar level, salt concentration in the blood, and so on, are kept in a state of relative balance or equilibrium.

The basic idea is that when a state of imbalance arises (for example, through a substantial rise in body temperature), something must happen to correct the imbalance and restore equilibrium (sweating). In this case, the animal doesn't have to 'do' anything, because sweating is completely automatic and purely physiological. However, if the imbalance is caused by the body's need for food or drink (*tissue need*), the hungry or thirsty animal has to do something to obtain food or water. This is where the concept of a *homeostatic drive* becomes important. Tissue need leads to internal imbalance, which leads to homeostatic drive, which leads to appropriate behaviour, which leads to restoration of internal balance, which leads to drive reduction.

The internal environment requires a regular supply of raw materials from the external world (Green, 1980). While oxygen intake, for example, is involuntary and continuous, eating and drinking are *voluntary* and *discontinuous* (or spaced). We talk about a hunger and thirst drive, but we don't talk about an 'oxygen drive'. Because of the voluntary nature of eating and drinking, hunger and thirst are the homeostatic drives that biopsychologists have been most interested in.

Hunger and eating

Does hunger cause eating?

ASK YOURSELF...
- What makes you eat?
- Why do you get hungry?

If there's a common-sense theory of eating, it's that we eat because – and when – we're hungry. What could be simpler? If asked why we get hungry, most people would probably say that 'our bodies get hungry' – that is, certain events take place in our bodies when we haven't eaten for a certain period of time, and these act as the 'signal' to eat. We experience that signal as hunger.

This fits very neatly with the hunger drive outlined above. If we place the experience of hunger in between 'internal imbalance' and 'homeostatic drive', we get a nice blend of the common-sense and drive-reduction theories, with hunger towards the end of a chain of causation that results in eating.

But is hunger either a necessary or sufficient condition for eating to occur? Can eating occur in the absence of hunger, and is it possible that we might not eat despite being hungry? We've all been tempted by the look or the smell of food when not feeling hungry, and we're not usually still hungry by the time the dessert trolley comes along. In other words, we often eat simply because we like it. This suggests that *hunger isn't necessary* for eating. Conversely, people who go on diets or hunger strike aren't eating (or are eating less than they might otherwise do) despite being very hungry, suggesting that *hunger isn't sufficient*.

So, there seems to be no biological inevitability about the hunger–eating relationship. However, as Blundell & Hill (1995) point out, under many circumstances there is a close relationship between the pattern of food intake and the rhythmic fluctuation of hunger. For example, many experimental studies confirm the strong link between the intensity of experienced hunger sensations and the amount of food eaten. This fairly consistent finding has been interpreted as showing that there's a causal connection between hunger and the size of a following meal. But in reality, certain physiological mechanisms are probably producing *both* the sensations of hunger *and* the eating behaviour.

Blundell and Hill propose an *appetite control system*, in which hunger, eating and physiological mechanisms are coupled together, but the coupling isn't perfect. There will be circumstances where uncoupling can occur, as in the hunger strike example, or in cases of eating disorders (such as obesity and anorexia nervosa: see Chapter 44). So, what might some of these physiological mechanisms be? Assuming that, normally, these are 'coupled' (or correlated) with hunger, what happens when the 'body gets hungry'?

What prompts us to eat?

Carlson (1992) points out that the physiological signals that cause eating to begin aren't necessarily the ones that cause it to end. There's considerable delay between the act of eating (the *correctional mechanism*) and a change in the state of the body. So, while we may start eating because the level of nutrients has fallen below a certain point, we certainly don't stop because that level has been restored to normal. In fact, we usually stop eating long before this, since digestion takes several hours to complete. Therefore, the signals for hunger and for *satiety* (the state of no longer being hungry) are sure to be different. Probably the earliest formal theory of hunger was proposed by Cannon.

KEY STUDY 9.1 'Swallow a balloon if you're hungry' (Cannon & Washburn, 1912)
- Cannon originally believed that the hunger drive is caused by stomach contractions ('hunger pangs') and that food reduces the drive by stopping the contractions.
- Washburn swallowed an empty balloon tied to the end of a thin tube. Then Cannon pumped some air into the balloon and connected the end of the tube to a water-filled glass U-tube, so that Washburn's stomach contractions would cause an increase in the level of water at the other end of the U-tube (see Figure 9.2). He reported a 'pang' of hunger each time a large stomach contraction was recorded.

- These results were soon confirmed by a case study (cited in Carlson, 1992) of a patient with a tube implanted through his stomach wall, just above the navel. He'd accidentally swallowed some acid, which caused the walls of his oesophagus (the muscular tube that carries food from the throat to the stomach) to fuse shut. The tube allowed him to feed himself and provided a means of observing his stomach activities.
- When there was food in his stomach, small rhythmic contractions (subsequently named peristaltic contractions/peristalsis) mixed the food and moved it along the digestive tract. When it was empty, the contractions were large and associated with the patient's reports of hunger.

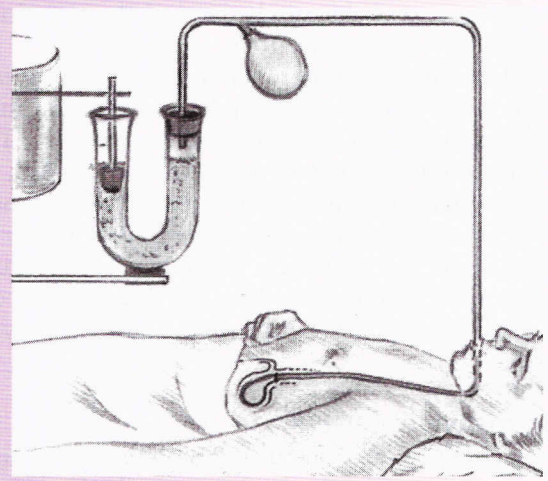


Figure 9.2 The system developed by Cannon and Washburn in 1912 for measuring stomach contractions (from Pinel, *Biopsychology* 2nd Edition, published by Allyn and Bacon, Boston, MA. Copyright © 1993 by Pearson Education. Reprinted by permission of the publisher)

An evaluation of Cannon's 'hunger pangs' theory

Sometimes patients have their stomachs removed (because of disease) and the oesophagus is 'hooked up' directly to the duodenum or small intestine (the upper portion of the intestine through which most of the glucose and amino acids are absorbed into the bloodstream: see below). They continue to report feeling hungry and satiated. Even though their stomachs are bypassed, they maintain normal body weight by eating more frequent, smaller meals (Pinel, 1993).

Similarly, cutting the neural connections between the *gastrointestinal tract* (GIT) (comprising mainly the stomach and intestine) and the brain (that is, cutting the *vagus nerve*) has little effect on food intake – either in experimental animals or human patients.

These findings suggest that Cannon exaggerated the importance of stomach contractions in causing hunger. But this doesn't mean that the stomach and the GIT play no part in hunger and satiety. If the vagus nerve is cut, signals arising from the gut can still be communicated to the brain via the circulatory system. These signals convey information about the *components* of the food that's been absorbed. Some of the nutrients whose depletion acts as a signal to start eating are fats (lipids), carbohydrates (including glucose), vitamins/mineral salts and proteins/amino acids. Fats and carbohydrates are burnt up in cellular reactions and provide the energy to fuel metabolic processes. *Metabolism* refers to all the chemical processes occurring in the body's cells and that are essential for the body's normal functioning. *Metabolic rate* refers to the amount of energy the body uses.

Also, the presence of food in the stomach (*stomach loading*) is important in the regulation of feeding: if the exit from the stomach to the duodenum is blocked off, rats will still eat normal-sized meals. It seems that information about the stretching of the stomach wall caused by the presence of food is passed to the brain (via the vagus nerve), allowing the brain's feeding centres to control meal size.

When we engage in vigorous physical activity, our muscles are fuelled by fats and carbohydrates, which are stored as energy reserves. The cells that store our fat reserves are called *adipocytes*, and they clump together as *adipose tissue* (or simply 'fat'). Carbohydrates are stored as *glycogen*. Two major accounts of why we start eating are the *glucostatic* and *lipostatic theories*.

Glucostatic theory

According to *glucostatic theory* (GT), the primary stimulus for hunger is a decrease in the level of blood glucose below a certain set point. Glucose is the body's (especially the brain's) primary fuel. The *glucostat* was assumed to be a neuron (probably in the hypothalamus), which detects the level of blood glucose in much the same way as a thermostat measures temperature.

According to Pinel (1993), Mayer's (1955) version of GT was particularly influential, because it dealt with a serious problem associated with earlier versions. He proposed that it was *glucose utilisation* (the rate at which it's used), rather than *absolute blood glucose level*, that was regulated by feeding. While these are usually highly correlated, Mayer's version could account for those few occasions where high levels are associated with *hyperphagia* (overeating). For example, people with diabetes mellitus overeat, despite high blood glucose levels. This is because their pancreas fails to produce sufficient quantities of insulin (needed for glucose to enter most body cells and to be utilised by them).

Mayer's hypothesis was supported by experiments with mice (Mayer & Marshall, 1956), which appeared to identify the location of the glucoreceptors in the *ventromedial hypothalamus* (VMH). They concluded that the VMH is a *satiety centre*. However, although a fall in blood glucose may be the most important physiological signal for hunger, it's not the only one. If animals eat a meal that's low in carbohydrate but high in fats or proteins, they still manage to eat a relatively constant amount of calories, even though their blood glucose is reduced

slightly. If eating were controlled *exclusively* by blood glucose, we'd expect them to overeat and get fat (Carlson, 1992).

Lipostatic theory

According to Green (1994), *lipostatic theory* (LT) focuses on the *end product* of glucose metabolism, namely the storage of fats (lipids) in adipocytes. Body fat is normally maintained at a relatively constant level. Similarly, fluctuations in the amount of stored fats largely determine variations in body weight. According to Nisbett's (1972) version of LT, we all have a body weight set point around which our weight fluctuates within quite narrow limits; this is determined by the level of fats in the adipocytes.

The most frequently cited evidence in support of the lipostatic theory is the failure of short-term dieting programmes to produce long-term weight loss: as soon as dieting stops, the person regains the weight that's been lost. Other evidence comes from animal experiments in which lesions are made in the hypothalamus. When the *lateral hypothalamus* (LH) is damaged, rats will stop eating, even when food is readily available, to the point of death from starvation. This failure to feed is called *aphagia*. It was originally taken to indicate that the LH normally functions to *stimulate* eating (and so represents another partial answer to the question 'Why do we start eating?').

KEY STUDY 9.2 Lowering body weight before the lesion (Keesey & Powley, 1975)

- Keesey and Powley deprived rats of food, so that their body weight was lowered substantially.
- When lesions were then made in their LH, they started eating *more* food (not less). In normal rats, the lesion lowers the body weight set point, and the resulting failure to eat occurs because the animal is trying to adjust to this lower target weight.
- However, if the weight is reduced *before* the lesion is made to below the lesion-produced target, the rat now *increases* feeding (following the lesion) in order to reach the new (higher) set point.

Keesey and Powley's findings mean that damage to the LH affects feeding only *indirectly* (as Nisbett suggests), by altering the body weight set point. Feeding is aimed at attaining this new target.

Set point or settling point?

According to Pinel (1993), GT and LT are *complementary*, rather than mutually exclusive. GT was meant to account for the initiation and termination of eating (relatively *short-term* processes), while LT was proposed to explain *long-term* feeding habits and the regulation of body weight. They both assume the existence of mechanisms within the CNS that are sensitive to deviations from one or more hypothetical set points. This assumption is itself based on another, namely that homeostasis implies the existence of set-point mechanisms.

Many current biopsychological theories of eating reject these assumptions in favour of the view that body weight tends to drift around a natural *settling point* – that is, the level at which the various factors that influence it achieve balance or equilibrium. Pinel (1993) believes that earlier theorists were seduced by the analogy with the thermostat, which is a compelling set-point model. His analogy for a settling point theory is the *leaky barrel model*: the level of fat in the body, like the water level in a leaky barrel, is regulated around a natural settling point rather than a predetermined set point.

ASK YOURSELF...

- What are your two or three favourite foods (or meals)?
- What exactly is it about them that you like so much?
- How much, if at all, do you consider *social* factors play a part in your eating behaviour?

Other factors that influence eating

A settling point theory is more compatible with research findings that implicate factors other than internal energy deficits as causes of eating. As we noted earlier, hunger is neither a necessary nor a sufficient condition for eating to take place. For example, even if it were possible to explain hunger purely in terms of lowered levels of glucose and fat, we'd still need to identify other influences on eating. According to Pinel (1993):

> The modern era of feeding research has been characterized by an increasing awareness of the major role played by learning in determining when we eat, what we eat, how much we eat, and even how the food that we eat is digested and metabolised. The concept of the feeding system has changed from that of an immutable system that maintains glucose and fat levels at predetermined set points, to that of a flexible system that operates within certain general guidelines but is 'fine-tuned' by experience ...

Eating for pleasure

Both humans and other animals are *drawn* to eat (rather than *driven* to eat) by food's *incentive properties* – that is, its anticipated pleasure-producing effects (or *palatability*). According to incentive theories, both internal and external factors influence eating in the same way, namely by changing the incentive value of available foods. Signals from the taste receptors seem to produce an immediate decline in the incentive value of *similar tasting food*, and signals associated with increased energy supply from a meal produce a general decrease in the incentive properties of *all foods*.

Support for this view comes from the discovery of LH neurons that respond to the incentive properties of food,

rather than food itself (Rolls & Rolls, 1982). When monkeys were repeatedly allowed to eat one palatable foodstuff, the response of LH neurons to it declined (a form of habituation?), although not to other palatable foods. Neurons that responded to the sight of food would begin to respond to a neutral stimulus that reliably predicted the presentation of food. These findings explain very neatly the common experience of our 'mouths watering' (salivating) at the mere mention of our favourite food – or even a picture of it.

KEY STUDY 9.3 Learning to salivate (Pavlov, 1927)

- The smell of food, and the dinner bell, are *food-predicting cues* (or *classically conditioned stimuli*).
- They trigger digestive and metabolic events, such as salivation, insulin secretion and gastric secretions (*classically conditioned responses*). These digestive/metabolic events are also called *cephalic phase responses*.
- Pavlov (1927) was the first to demonstrate that a cephalic phase response can be conditioned: the sight or smell of milk produced abundant salivation in puppies raised on a milk diet, but not in those raised on a solid diet.
- Feeling hungry at those times of the day when we usually eat (whether or not we're experiencing an energy deficit) is another example of a classically conditioned response (see Chapter 11).

Knowing what to eat

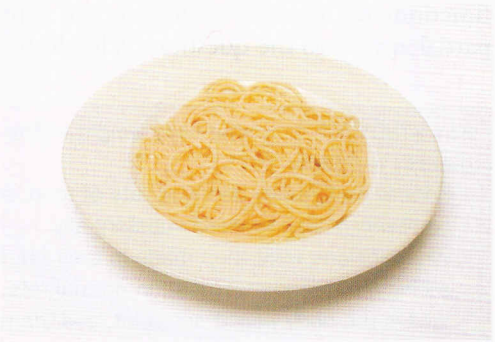
If learning is involved in the way humans and other animals respond to foods that are already palatable, could learning be involved in what is found palatable in the first place?

- We have innate preferences for tastes that are associated in nature with vital nutrients. For example, sweetness detectors on the tongue are probably there because they helped our ancestors identify food that's safe to eat. Even when we're not particularly hungry, we tend to find a sweet taste pleasant, and eating something sweet tends to increase our appetite (Carlson, 1992).
- Both humans and other animals also have the ability to learn the relationship between taste and the post-ingestion consequences of eating certain food. In *taste aversion studies*, rats learn to avoid novel tastes that are followed by illness (Garcia *et al.*, 1966: see Chapter 11). Rats are also able to learn to prefer tastes that are followed by the infusion of nutrients and flavours that they smell on the breath of other rats.
- Rats and human beings have in common a metabolism that requires them to eat a variety of different foods: no single food provides all essential nutrients. We generally find a meal that consists of moderate amounts of several different foods more interesting than a huge plate of only one food, however palatable that food might be. If we have access to only one particular food, we soon become tired of it (*sensory-specific satiety*). This encourages the consumption of a varied diet.

ASK YOURSELF...

- Which would you rather eat?





- Cultural evolution helps the selection of balanced diets. For example, Mexicans increased the calcium in their diet by mixing small amounts of mineral lime into their tortillas. But in the industrialised societies of Europe and North America, we seem to prefer diets that are fundamentally detrimental to our health (see Chapter 12). Manufacturers tend to sell foods that are highly palatable and energy-dense, but that often have little nutritional value. This encourages us to overeat and, as a result, to increase fat deposits and body weight. Blundell & Hill (1995) maintain that in *evolutionary terms*, overeating makes good sense:

> ... For human beings it can be supposed that during most of the tens of thousands of years of human evolution the biggest problem facing human-kind was the scarcity of food ... the existence of an abundance of food, highly palatable and easily available, is a very recent development in evolutionary terms. Accordingly, it is unlikely that evolutionary pressure has ever led to the development of mechanisms to prevent overconsumption ...

What stops us eating?

According to Blundell & Hill (1995), *satiety* (feeling 'full up' or satisfied) is, by definition, not instantaneous but something that occurs over a considerable period of time. It's useful, therefore, to distinguish different *phases of satiety* associated with different mechanisms that, together, comprise the *satiety cascade*. Most important for understanding the suppression and subsequent control of hunger are:

- *post-ingestive effects*, which include gastric distension, the rate of gastric emptying, the release of hormones (such as CCK: see Box 9.2) and the stimulation of certain receptors along the GIT
- *post-absorptive effects*, which refer to mechanisms arising from the action of glucose, fats, amino acids (and other metabolites) after absorption across the intestine into the bloodstream.

Box 9.2 Cholecystokinin (CCK)

- After food reaches the stomach, the protein is broken down into its constituent amino acids.
- As digestion proceeds, food gradually passes into the *duodenum* (small intestine). This controls the rate of stomach emptying by secreting a peptide hormone (short chains of amino acids) called *cholecystokinin* (CCK). CCK is secreted in response to the presence of fats, detected by receptors in the walls of the duodenum.
- Many studies have found that injecting CCK into hungry rats causes them to eat smaller meals. Wolkowitz *et al.* (1990) gave people injections of a drug that blocks CCK receptors in the peripheral nervous system (but not in the brain): they reported feeling more hungry and less full after a meal than controls given a placebo.

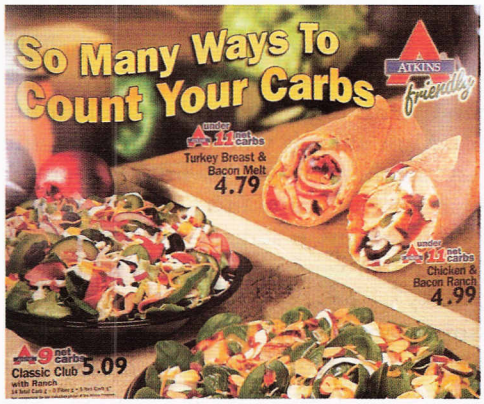
(Source: based on Carlson, 1992)

There's currently considerable research interest in whether protein, fat and carbohydrate differ in their satiating efficiency and their capacity to reduce hunger. One clear finding is that carbohydrates are efficient appetite suppressants. Also, the fat content of food influences its texture and palatability, but it has a disproportionately weak effect on satiety (Blundell & Hill, 1995).

Although the stomach may not be very important in causing hunger (see Key Study 9.1), it does seem to be important in satiety. For example, we noted that stomach loading and stretching of the stomach wall play a part in reducing hunger. The gastric branch of the vagus nerve carries emergency signals from the stretch receptors in the stomach wall, preventing us from overeating and damaging the stomach.

The brain's control of eating

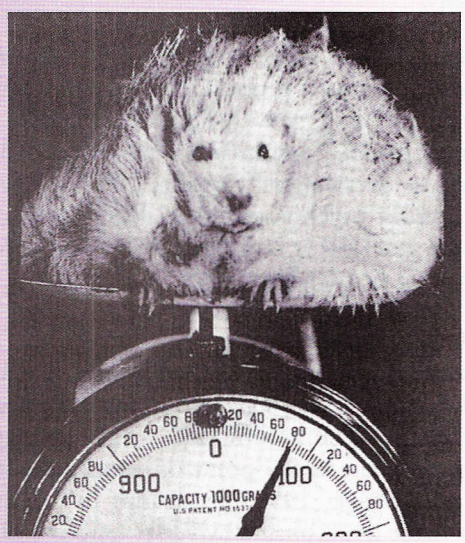
It's been known since the early 1800s that tumours of the hypothalamus can cause *hyperphagia* (excessive overeating) and obesity in humans (Pinel, 1993). But not until the advent of *stereotaxic surgery* in the late 1930s (see Chapter 4) were experimenters able to assess the effects of damage to particular areas of the hypothalamus on the eating behaviour of experimental animals.



The Atkins Diet advocates high fat and low carbohydrates (potatoes, bread and pasta). This goes against 'orthodox' thinking regarding healthy eating

KEY STUDY 9.4 Hyperphagia in rats (Hetherington & Ranson, 1942)

- Hetherington and Ranson found that large, bilateral lesions in the lower, central portion of the hypothalamus (the *ventromedial nucleus/VMN*) cause *hyperphagia*: the rat will carry on eating until it becomes grotesquely fat, doubling or even trebling its normal body weight.
- Although several structures were damaged by such lesions, it was generally assumed that the *ventromedial hypothalamus* (VMH) was the crucial structure.
- The resulting hyperphagia was taken to indicate that the normal function of the VMH is to *inhibit* feeding when the animal is 'full'. Hence, the VMH became known as the *satiety centre*. It's been found in rats, cats, dogs, chickens and monkeys (Teitelbaum, 1967).



A hyperphagic rat

The VMH syndrome

Paradoxically, VMH-lesioned rats *aren't* 'hell bent' on eating – they won't eat anything and everything. The taste of food seems to be especially important in hyperphagic rats. Most animals will eat even bad-tasting food ('you'll eat anything if you're hungry enough'), but hyperphagic rats are very fussy, and will refuse their regular food if quinine is added – even if this means that they become underweight (Teitelbaum, 1955).

What about people?

One possible explanation for the 'finicky' eating of VMH-lesioned rats is that they become less sensitive to *internal* cues of satiation (such as blood glucose level and body fat content) and more responsive to *external* cues (such as taste). Schachter (1971) claims that this may also apply to overweight people. Schachter *et al.* (1968) found that normal-weight people responded to the internal cue of stomach distension ('feeling bloated') by refusing any more food. But obese people tended to go on eating. The latter seemed to be responding to the *availability* of food. However, they're *less* willing to make an effort to find food compared with normal-weight people, who'll search for food – but only if they're genuinely hungry (Schachter, 1971).

- Overweight people also tend to report that they feel hungry at prescribed eating times, even if they've eaten a short while before. Normal-weight people tend to eat only when they feel hungry, and this is relatively independent of clock time. However, this increased sensitivity to external cues isn't necessarily what causes some people to become obese – it could just as easily be an *effect* of obesity.
- Although people with hypothalamic tumours tend towards obesity, there's no evidence that the hypothalamus doesn't function properly in overweight people generally.

Differences in *basal metabolic rate* largely determine our body weight, and are probably hereditary. There's very little evidence to suggest that lack of impulse control, poor ability to delay gratification or eating too quickly contribute to overweight (Carlson, 1992). However, the role of complex psychological variables has been studied much more extensively in relation to *anorexia nervosa* and *bulimia nervosa* (see Chapter 44).

The LH syndrome

If the VMH has traditionally been regarded as a 'brake' on eating, the *lateral hypothalamus* (LH) has been seen as the 'accelerator'. Bilateral lesions to the LH cause aphagia, a refusal to eat, even to the point of death from starvation (Anand & Brobeck, 1951; Teitelbaum & Stellar, 1954). Even rats made hyperphagic by VMH lesions will become aphagic by the addition of LH lesions. These findings suggest very strongly that the LH is a feeding centre.

However, the LH syndrome also includes *adipsia* (the complete cessation of drinking). Both aphagia and adipsia are, in turn, part of a more general lack of responsiveness to sensory input. The LH itself is a relatively large, complex and ill-defined area, with many nuclei and several major nerve tracts running through it. While electrical stimulation of the LH produces eating, it also triggers drinking, gnawing, temperature changes and sexual activity. Conversely, eating can also be elicited by stimulation of other areas of the hypothalamus, the amygdala, hippocampus, thalamus and frontal cortex. For all these reasons, Pinel (1993) believes that to call the LH a 'hunger centre' is a misnomer.

Thirst and drinking

ASK YOURSELF...

- As with food, what is it exactly that you like about your favourite drinks?
- Might social factors play a greater role here than in your eating (see Chapter 8)?



What starts us drinking?

It was thought until recently that drinking is motivated by a deficit in the body's water resources – that is, by deviation from set points, as part of a homeostatic drive mechanism. However, most drinking (like most eating) occurs in the absence of deficits. This suggests that the motivation to drink comes from anticipating its pleasurable effects (*positive incentive properties*). We tend to prefer drinks that have a pleasant taste (such as fruit juice) or pleasant pharmacological effects (such as alcohol, coffee and tea).

Positive incentive theory

Water deprivation increases the positive incentive value of almost all salt-free drinks. After 24 hours without a drink, people report that even plain water has a pleasant taste (Rolls *et al.*, 1980). If you add a little saccharine to the water of non-deprived rats, their water intake rockets. Like people, rats with unlimited access to water or other

palatable fluids drink far more than they actually need. As with food, *sensory-specific satiety* has a major effect on drinking. As fond as rats are of saccharine, if saccharine solution is constantly available ('on tap'), they'll come to prefer it less than when it's only available periodically.

Dry-mouth theory

A dry mouth and throat are obvious cues to thirst (the counterpart of the stomach contraction cues to hunger: see Key Study 9.1). Although a dry mouth is one consequence of water deficiency, it's not the primary factor in thirst. For example, producing a chronic dry mouth by removal of the salivary glands doesn't substantially increase water intake, unless rats are fed dry food or kept in a very hot environment. Conversely, blocking the sensation of a dry mouth fails to decrease water intake. The most convincing evidence against the dry-mouth theory comes from *sham drinking*: water flows down the oesophagus and then out through a fistula before it can be absorbed. Despite the lack of a dry mouth, animals sham-drink continuously (Pinel, 1993).

What makes us stop drinking?

According to set-point theories, drinking brings about a return to an internal water resource set point. When this has been achieved, drinking stops. But like hunger, thirst and drinking seem to stop long before enough time has elapsed for the body to have absorbed the water from the stomach, and for the water–salt balance in the blood to have been restored.

Stomach distension probably contributes to satiety. Cold water is more thirst quenching, because it moves out of the stomach much more slowly, and so provides a clearer stomach-distension signal to the brain. The *mouth-metering mechanism* also plays a part. This gauges the amount of water being ingested, and compares the amount needed to restore the water balance.

If set-point theories were correct, we'd expect that delivering water directly to where it's needed would eliminate thirst and deprivation-induced drinking. However, if water is injected directly into a rat's stomach or bloodstream, drinking is reduced by only 30 per cent of the amount injected. Even total replenishment of an animal's water resources has only a modest inhibitory effect on deprivation-induced drinking (about 30 per cent). These findings pose difficulties for any set-point theory (Pinel, 1993).

HULL'S DRIVE-REDUCTION THEORY

As we noted earlier, Hull's motivational theory must be considered in the context of his theory of learning. Drive reduction theory was intended to explain the fundamental principle of reinforcement, both *positive* (the reduction of a drive by the *presentation* of a stimulus) and *negative* (the reduction of a drive by the *removal* or *avoidance* of a stimulus).

Hull was interested in the *primary* (physiological), *homeostatic* needs and drives of hunger, thirst, air, avoiding injury, maintaining an optimum temperature, defecation and urination, rest, sleep, activity and propagation (reproduction). He believed that all behaviour (human and animal) originates in the satisfaction of these drives.

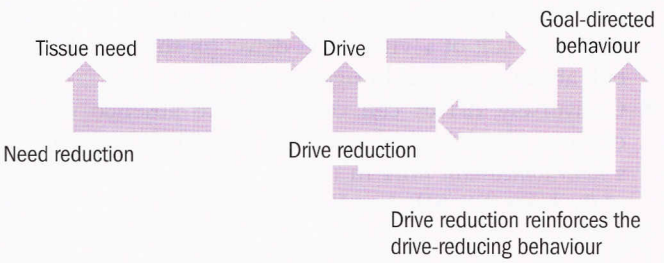


Figure 9.3 Summary of drive-reduction theory

Needs vs drives

While the terms 'need' and 'drive' are often used interchangeably, they're fundamentally different:

- *needs* are physiological and can be defined objectively (for example, in terms of hours without food or blood sugar level)
- *drives* are *psychological* (behavioural), and are *hypothetical constructs* – that is, abstract concepts that refer to processes/events believed to be taking place inside the person/animal, but that cannot be directly observed or measured.

However, Hull *operationalised* drives as hours of deprivation. He proposed a number of equations, which were meant to be testable in laboratory experiments (Walker, 1984). Perhaps the most important of these was:

$$sEr = D \times V \times K \times sHr$$

where *sEr* stands for the intensity or likelihood of any learned behaviour which can be calculated if four other factors are known, namely:

- D – the *drive* or *motivation*, measured by some indicator of physical need, such as hours of deprivation
- V – the *intensity* of the signal for the behaviour
- K – the *degree of incentive*, measured by the size of the reward or some other measure of its desirability
- *sHr* – *habit strength*, measured as the amount of practice given, usually in terms of the number of reinforcements.

Evaluation of drive reduction theory

ASK YOURSELF...

- Try to formulate some arguments against drive-reduction theory.

- Hull's basic premise is that animals (and, by implication, people) *always* and *only* learn through primary drive reduction. But the relationship between primary drives and needs is very unclear, as we saw earlier when discussing the eating behaviour of obese people.
- At its simplest, needs can arise without specific drives, as in learning what and how much to eat (see above). For example, we need vitamin C, but we wouldn't normally talk of a 'vitamin C drive' (in the way that we talk about a general hunger drive).
- Conversely, drives can occur in the absence of any obvious physiological need. An important example of a *non-homeostatic drive* in rats is *electrical (self-)stimulation of the brain* (ES-SB) (see Key Study 9.5).

KEY STUDY 9.5 What a rat wouldn't do for a shock (Olds & Milner, 1954)

- Olds and Milner implanted an electrode near a rat's septum (part of the limbic system), so that every time it pressed a lever, it would receive an electric shock.
- Rats made between 3000 and 7500 lever-pressing responses in a 12-hour period.
- Olds (1956) reported that one rat stimulated itself more than 2000 times per hour for 24 consecutive hours.
- Olds (1958) reported that rats, which normally press a lever 25 times per hour for food reward, will press 100 times *per minute* for a reward of ES-SB.

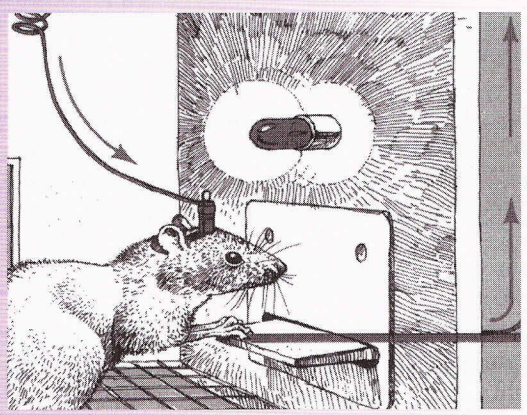


Figure 9.4 Olds (1956) implanted electrodes in the hypothalami of rats. The rats could trigger an electrical stimulus by depressing a lever. Clearly, the region where the electrode was implanted constitutes some kind of pleasure centre (adapted from J. Olds ©1956 Pleasure centres in the brain. Scientific American, Inc. All rights reserved)

Brain stimulation is such a powerful reinforcer that a male rat with an electrode in its LH will self-stimulate in preference to eating if hungry, drinking when thirsty or having access to a sexually receptive female. This effect has been found in rats, cats, monkeys and pigeons (and humans, occasionally). The main reward site for ES-SB is the *median forebrain bundle* (MFB), a fibre tract that runs from the brainstem up to the forebrain through the LH (Beaumont, 1988; Carlson, 1992). The effect seems to depend on the presence of dopamine and noradrenaline. These reward centres are generally thought of as the neural substrate of 'pleasure', so that any behaviour defined as pleasurable involves their activation (see Chapter 8). ES-SB is seen as a 'short-cut' to pleasure, eliminating the need for natural drives and reinforcers.

- Tolman's *cognitive behaviourism* challenged Skinner's theory of *operant* conditioning, because it showed that learning could take place in the absence of reinforcement (*latent learning*: see Chapter 11). By implication, Tolman showed that learning could take place in the absence of drive reduction.
- Hull's theory emphasised primary (homeostatic) drives to the exclusion of secondary (non-homeostatic) drives. Primary drives are based on primary (innate) needs, but much human (and, to a lesser extent, non-human) behaviour can be understood only in terms of secondary (acquired) drives. Several behaviourist psychologists – notably Miller (1948), Mowrer (1950), and Dollard & Miller (1950) – modified Hull's theory to include acquired drives (in particular, anxiety), which led to a great deal of research on avoidance learning in the 1950s (see Chapters 11, 32, 44 and 45).
- In Maslow's terms, drive-reduction theory deals only with survival needs, completely ignoring the self-actualisation (or 'growth') needs, which make human motivation distinctively different from that of non-humans.

NON-HOMEOSTATIC NEEDS AND DRIVES

Just as ES-SB cannot be accommodated by drive reduction when considering only non-human motivation, so non-humans seem to have other non-homeostatic drives that they share, to some degree, with humans. The rest of this chapter will be devoted to these important, and pervasive, non-homeostatic needs and drives.

ASK YOURSELF...

- When we – and non-humans – aren't eating, drinking and doing all the other things we have to do to survive, what do we do?
- Why do we do it?
- Are all our activities ultimately aimed at survival, or are even non-humans capable of doing things 'just for the sheer hell of it'?

Competence motives: motives without specific primary needs

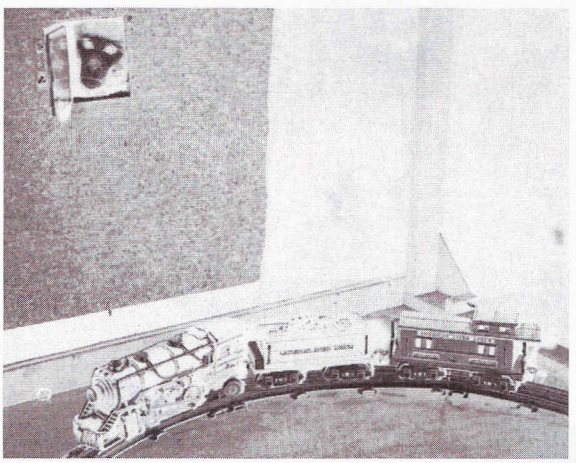
According to White (1959), the 'master reinforcer' that keeps most of us motivated over long periods of time is the need to confirm our sense of personal competence:

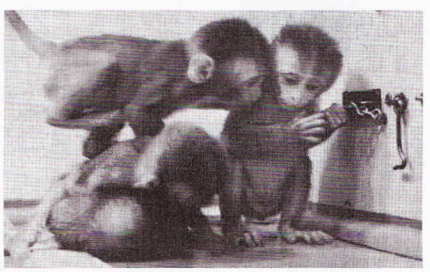
our capacity to deal effectively with the environment. It's *intrinsically* rewarding and satisfying to feel that we're capable human beings, to be able to understand, predict and control our world (aims which also happen to be the major aims of science: see Chapter 3).

Unlike hunger, which comes and goes, competence seems to be a continuous, ongoing motive. We can't satisfy it and then do without it until it next appears, because it's not rooted in any specific physiological need. This is why it isn't very helpful to think of the competence motive as a drive that pushes us into seeking its reduction. While homeostatic drives involve an attempt to *reduce* something (tissue need), competence motives often involve the *search for stimulation*.

Seeking stimulation

If rats are allowed to become thoroughly familiar with a maze, and then the maze is changed in some way, they'll spend more time exploring the altered maze. This occurs even in the absence of any obvious extrinsic reward, such as food. They're displaying a *curiosity drive* (Butler, 1954). Butler (1954) and Harlow *et al.* (1950) gave monkeys mechanical puzzles to solve, such as undoing a chain, lifting a hook and opening a clasp. The monkeys did these puzzles over and over again, for hours at a time, with no other reward: they were displaying their *manipulative drive* (Harlow *et al.*, 1950).



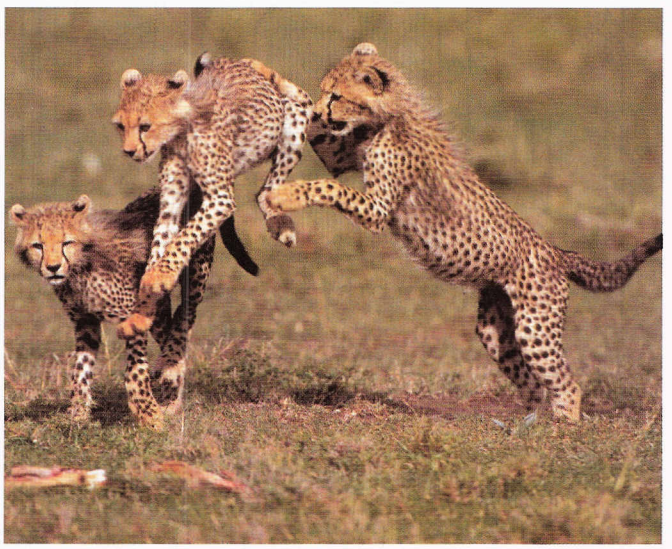


Research by Butler and Harlow has shown that animals are motivated to explore and manipulate their environments, quite unrelated to biological drives such as hunger and thirst. Monkeys will learn and work in order to open a door which allows them to view an electric train. They will also work diligently to open locks which lead to no tangible reward

Play and motivation

Much of the behaviour normally described as play can be thought of in terms of the drives for curiosity, exploration and manipulation. The purpose of play from the child's point of view is simple enjoyment. It doesn't consciously play in order to find out how things work, or to exercise its imagination, but simply because it's fun and intrinsically satisfying. Any learning that does result is quite incidental. However, for the young child there's no real distinction between 'work' and 'play' in an adult sense.

Piaget (1951) distinguishes between *play*, which is performed for its own sake, and '*intellectual activity*' or *learning*, which has an external aim or purpose. This distinction is meant to apply to all three major types of play he describes: *mastery*, *symbolic/make-believe* and *play with rules*. (Piaget's theory is discussed in detail in Chapter 34.) Nor is play confined to humans. The young of many species engage in activities that seem to have little to do with homeostatic or survival needs. However, the higher up the evolutionary scale the species, the more apparent and purposeful the play becomes, and the more the nature of play changes as the young animal develops. (Fontana, 1981a).



Play – both pleasurable and purposeful

Motivation and adaptation

Piaget saw play as essentially an *adaptive activity*. Throughout development, play helps to consolidate recently acquired abilities as well as aiding the development of additional cognitive and social skills. In the same way, the competence motives of curiosity, exploration and manipulation undoubtedly have adaptive significance for an individual and, ultimately, for the species. Investigating and exploring the environment equips an animal with 'knowledge', which can be used in times of stress or danger (Bolles, 1967).

Optimal level (or arousal) theories

According to Berlyne (1960), investigation and exploration are based on an inbuilt tendency to seek a certain 'optimum' level of stimulation or activity. Exploring the unfamiliar increases arousal, but if it's too different from what we're used to, arousal will be too high (we'll feel anxious and tense). If it's *not* different enough, arousal is too low (we'll soon become bored).

Optimum level theories are supported by *sensory deprivation experiments*. In classic experiments carried out by Hebb and his colleagues at McGill University in the 1950s (Bexton *et al.*, 1954; Heron, 1957), participants were almost completely cut off from their normal sensory stimulation, by wearing blindfolds, earmuffs, cardboard tubes on their arms and legs, and so on. They soon began to experience extreme psychological discomfort, reported hallucinations, and couldn't tolerate their confinement for usually more than three days.

Cohen & Taylor (1972) studied the psychological effects of long-term imprisonment, and found that sensory deprivation and monotony are experiences that prisoners share with explorers, space travellers and round-

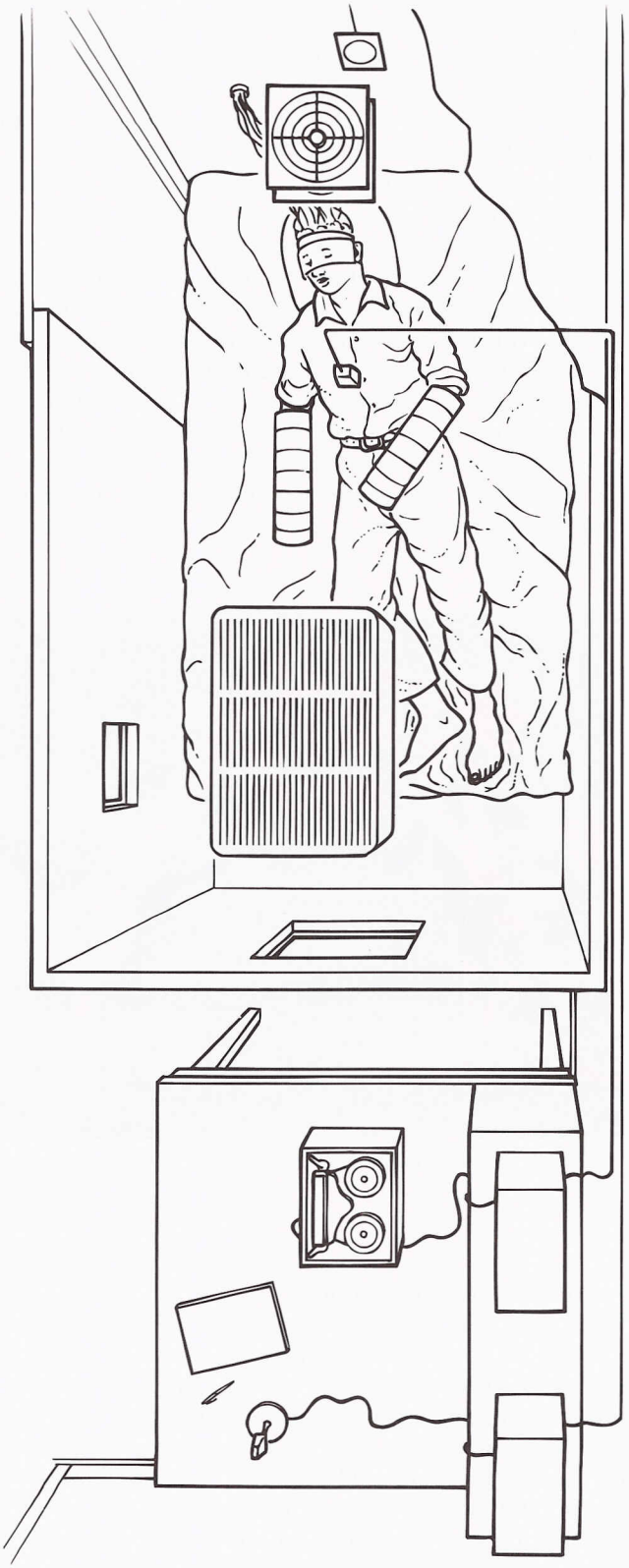


Figure 95 Sensory deprivation cubicle (Heron, 1957)

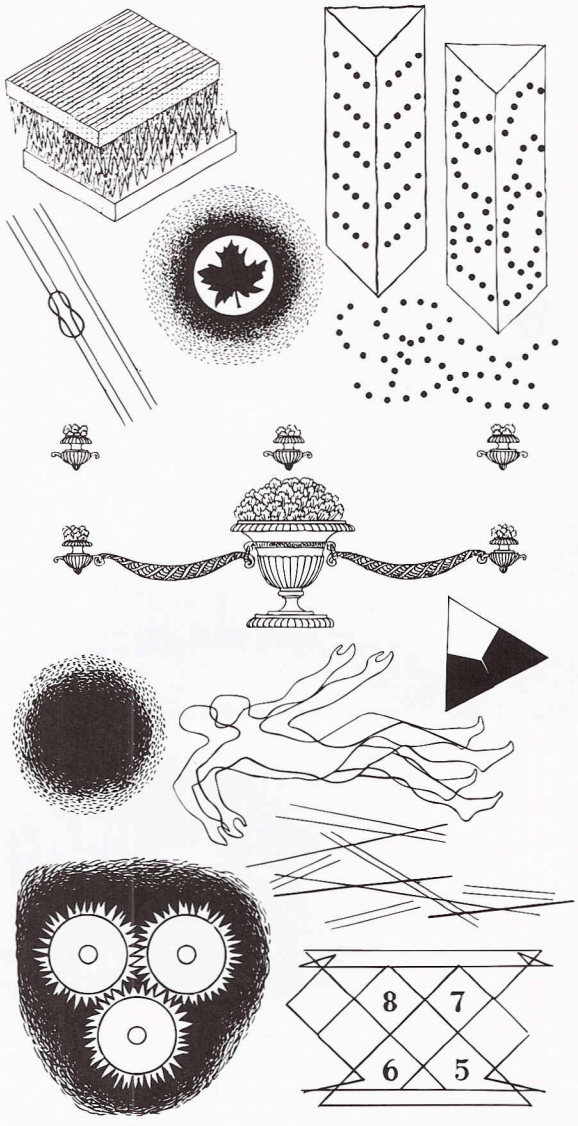


Figure 9.6 Hallucinations of sensory-deprived participants

the-world sailors. Conversely, excessive stimulation ('*sensory overload*') is also debilitating, and may be responsible for some kinds of psychological disorders in our highly urbanised society (see Chapter 12's discussion of stress).

The need for control

Another major kind of competence motive is the need to be in control of our own destiny, and not at the mercy of external forces (Rubin & McNeil, 1983). This is closely linked to the need to be free from the controls and restrictions of others, to dictate our own actions and not be dictated to. According to Brehm (1966), when our freedom is threatened, we tend to react by reasserting our freedom (*psychological reactance*: see Chapter 49).

When people initially expect to have control over the outcomes of their actions, the first experience of not doing so is likely to produce reactance, but further bad experiences are likely to result in *learned helplessness* (Seligman, 1975). Rotter's (1966) concept of *locus of control* refers to individual differences in people's beliefs about what controls events in their everyday lives (see Chapter 12).



Figure 9.7 Sample TAT picture

Cognitive motives

Consistency and achievement

One of the most researched cognitive motives is the need for *cognitive consistency*, which is discussed in Chapter 24 in relation to attitudes and attitude change. Another that has generated an enormous amount of research and theorising is *achievement motivation/need for achievement* (nAch). This was one of the 20 human motives identified by Murray in 1938. He drew a sharp distinction between *psychogenic* (or psychological) needs, which are learned, and *viscerogenic* (or physiological) needs, which are innate.

Murray agreed with Freud that people express their true motives more clearly in free association than in direct self-reports (or questionnaire-type personality tests: see Chapter 42). Based on this belief, Murray (together with Morgan, 1935) devised the *Thematic Apperception Test* (TAT). This consists of a series of 20 pictures, presented one at a time, ten in each of two sessions separated by at least one day. Slightly different versions are used for men and women, boys and girls. The participant is told that the TAT is a test of imagination and asked to make up a story that describes:

- what is happening and who the people are
- what has led up to the situation
- what is being thought and what is wanted, and by whom
- what will happen, what will be done.

The pictures are sufficiently ambiguous with regard to the events depicted and the emotions of the characters to allow a wide range of interpretations. How a person interprets them reveals their own unconscious motives. Hence, the TAT is a major *projective test* used in motivation and personality research (see Chapter 42). A person who scores high on nAch is concerned with standards of excellence, high levels of performance, recognition from others and the pursuit of long-term goals (they're *ambitious*).

Social motives

According to Geen (1995), social motivation refers to the activation of processes involved in the initiation, direction and energisation of individual behaviour 'by situations in which other people are in close contact with the individual'. It's usually assumed that these situations don't provide specific cues for individual behaviour (they're 'weak'). He contrasts them with 'strong' situations, such as those in which there's direct social influence (as in obedience experiments: see Chapter 27). Geen gives three main examples:

1. *social facilitation* – the enhancing effect on behaviour of the mere presence of others (see Chapter 31)
2. *social presentation* – behaving in ways that attempt to present a desirable impression to others (see Chapter 22)
3. *social loafing* – the tendency for individual effort to diminish in group task situations, partly as a result of diffusion of responsibility (again, see Chapter 31).

Each of these may be thought of as a manifestation of the more general influence of *social anxiety*, a state created when a person who wishes to make a certain impression on others doubts that this impression can actually be

made. But why should the fear of making a bad impression be such a powerful motive for individual behaviour?

One answer can be found at quite a low level of Maslow's hierarchy, namely love and belongingness. This includes the need for affiliation, the company of other people (especially family, friends and work colleagues), and the need to be accepted by, and included within, society. Certain kinds of conformity can be understood in terms of this basic need (a survival need in Maslow's terms: see Chapter 26). But does this need itself stem from some other, even more fundamental need?

According to Greenberg *et al.* (1986, cited in Geen 1995), human culture, which society represents, provides a buffer against facing one's own vulnerability and mortality. Society provides a 'cultural drama' that gives meaning to life and without which the individual would experience a dread of being alive. We are, therefore, motivated to play an approved role in that drama: by meeting cultural standards, the individual achieves the approval and acceptance of others, and avoids rejection and isolation. This can be seen in relation to safety needs, the second level of Maslow's hierarchy, and includes 'fear of the unknown'. The ultimate example of this is the fear of death (see Chapter 39). The general need for others (*affiliation*) and our attraction to particular others are discussed in Chapter 28 on interpersonal relationships.

Fiske (2004) argues that, from the idea that we need other people for our basic survival, it follows that over time we would have developed some *core social motives* that interact with the social situation, to help us survive in groups. We're motivated to get along with other people, because it's *adaptive* to do so. She defines core social motives as:

> ... fundamental, underlying psychological processes that impel people's thinking, feeling, and behaving in situations involving other people ...

She identifies five core social motives: *belonging* (see above), *understanding*, *controlling*, *self-enhancing*, and *trusting*. Belonging underlies the others.

CHAPTER SUMMARY

- The study of motivation is the study of the causes of behaviour. While there's general agreement that motivated behaviour is purposeful, goal-directed behaviour, different theoretical approaches see the underlying causes in very different ways.
- 'Motive' comes from the Latin for 'move' and denotes that which energises and gives direction to people's behaviour.
- Motives have been classified in various ways, but the most comprehensive classification is Maslow's **hierarchy of needs**, which distinguishes survival, deficiency or **D-motives**, and growth, being or **B-motives**.
- **Hedonism** can be seen as a central theme in both Freud's **psychoanalytic theory** and Skinner's **operant conditioning**.
- Influenced by Darwin's theory of evolution, many early psychologists tried to explain human behaviour in terms of large numbers of **instincts**. This approach was replaced by Woodworth's concept of **drive**.
- Two major forms of drive theory are Cannon's **homeostatic drive theory** and Hull's **drive reduction theory**.
- Hunger and thirst are the homeostatic drives that have been most researched by biopsychologists. The earliest formal theory of *hunger* was Cannon's theory of **stomach contractions**.
- According to the **glucostatic theory**, the primary stimulus for hunger is a decrease in the level of **blood glucose** below a certain **set point**. The **glucostat** (probably a neuron in the hypothalamus) detects the level of blood glucose in the way a thermostat measures temperature.
- The other major set-point theory is the **lipostatic theory**, which focuses on the storage of **lipids** (fats) in the **adipose tissue**. It's supported by several observations, including the finding that damage to the LH affects feeding **indirectly** by altering the body weight set point.
- The glucostatic theory was meant to account for the relatively **short-term processes** of eating initiation (and termination), while the lipostatic theory was meant to explain **long-term** feeding habits and regulation of body weight. They share the belief in predetermined set points.
- Eating, in both humans and other animals, is partly determined by food's **palatability**. Food-predicting cues elicit **cephalic phase responses**, such as salivation, through **classical conditioning**.
- **Sensory-specific satiety** encourages the consumption of a varied diet. Although humans are capable of learning which diets best meet their biological needs, people in industrialised societies seem to prefer diets that are fundamentally harmful to health, with obesity becoming increasingly common.
- Lesions in the **VMN** of the rat's hypothalamus cause **hyperphagia**, and the **VMH** became known as the '**satiety centre**'. However, the VMH syndrome also involves increased sensitivity to **external cues** of satiation. This also seems to be true of obese humans.
- Lesions to the **LH** cause **aphagia**, which suggests it's a feeding centre. However, the effects of LH lesions are much more diffuse than originally thought.
- **Drinking** has traditionally been seen as motivated by deviation from set points induced by water deprivation. Although there's some support for the **dry-mouth theory**, this isn't the primary factor in thirst.
- It's difficult for set-point theories to explain why drinking stops, whether this is water-deprived

drinking or not. Both **stomach distension** and the **mouth-metering mechanism** play a part in satiety.

- Hull's **drive-reduction theory** was intended to explain the principle of **reinforcement**. However, needs can arise without specific drives and drives can occur in the absence of any obvious tissue need, as in **ES-SB**. Brain stimulation is a very powerful reinforcer, which can override the primary drives of hunger, thirst and sex.
- **Latent learning** shows that learning can take place in the absence of reinforcement. Much behaviour can only be understood in terms of secondary (**non-homeostatic**) drives, such as anxiety and its avoidance.
- Humans and non-humans share certain non-homeostatic needs and drives, such as **curiosity**, **manipulation** and **play**. These are linked to the **search for stimulation** and the **need for competence**, important for **adaptation** to our environment.
- **Optimal level theories** can help explain why both **sensory deprivation** and **sensory overload** can be stressful and disturbing.
- **Cognitive consistency** and **need for achievement** (**nAch**) are two very important **cognitive motives**.
- Many kinds of social behaviour can be seen as a manifestation of **social anxiety**, which in turn may reflect the more fundamental need for safety and protection from our fear of death.
- **Core social motives** include **belonging**, **understanding**, **controlling**, **self-enhancing** and **trusting**.

Links with other topics/chapters

- Each *major theoretical approach* tries to identify key processes and mechanisms ('causes') underlying human behaviour (Chapters 2 and 4).
- Maslow's hierarchy of needs is commonly discussed in relation to *personality*. It represents an *idiographic* theory, seeing every individual as unique (Chapter 42).
- Many of the experiments designed to understand the mechanisms involved in eating and drinking involve surgical procedures performed on rats (including damaging parts of their brain). This raises fundamental questions about the *ethics of animal experimentation* (Chapter 48).
- The study of obesity can help identify some of the psychological variables involved in eating, but these have been explored much more extensively in relation to other *eating disorders*, in particular *anorexia nervosa* and *bulimia nervosa* (Chapter 44).
- Hull's drive-reduction theory was meant to explain the principle of *reinforcement*, and a major challenge to it (and to Skinner's *operant conditioning*) came from Tolman's *cognitive behaviourism* (Chapter 11).
- Several behaviourist psychologists modified Hull's theory by including acquired drives, especially *anxiety*, which is relevant to understanding *learning* (Chapter 11), *phobias* (and other *mental disorders*), and *behavioural treatments* for those disorders (Chapters 44 and 45).
- *Play* represents an important competence (non-homeostatic) motive, which Piaget saw as essentially an *adaptive* activity (Chapter 34).
- *Psychological reactance* is a response to threats to our freedom and the need to feel in control (Chapter 49).
- A major cognitive motive is *cognitive consistency*, which is central to certain theories of *attitude change* (Chapter 24).
- Social motives underlie many of the major areas of social psychological research. These include *social presentation/self-enhancing* (Chapter 22), *understanding* (Chapter 23), *belonging* (Chapters 26 and 27), *control* (Chapter 29), *trust* (Chapter 30), *social facilitation* and *social loafing* (Chapter 31).

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10

EMOTION



INTRODUCTION AND OVERVIEW

Mr Spock in *Star Trek* often points out to Captain Kirk how much energy human beings waste through reacting emotionally to things, when a more logical and rational approach would be more productive. But would we be human at all if we didn't react in this way? This isn't to advocate 'being emotional' in the sense of losing control of our feelings or being unable to consider things in a calm and detached way, but it's the richness of our emotions, and our capacity to have feelings as well as to think things through and to reason, which makes us unique as a species. Emotions set the tone of our experience and give life its vitality. They are internal factors that can energise, direct and sustain behaviour (Rubin & McNeill, 1983).

At the same time, we often respond emotionally to events and situations that we believe make demands on us that we cannot meet – either because we don't have the necessary abilities or resources, or because they force us to make very difficult choices and decisions. We describe these negative kinds of events/situations as *stressful*, and our emotional responses to them as the experience of *stress* (see Chapter 12).

One of the key issues running through research into the nature of emotional experience is to what extent it's a *physiological* phenomenon. Related to this is the question of whether different subjective emotions (feeling angry, afraid, and so on) are also *physiologically distinct*. More recent theories have emphasised the role of *cognitive factors* in our experience of emotion, and are collectively referred to as *cognitive appraisal theories*.

WHAT IS EMOTION?

ASK YOURSELF...
- What gives emotions their 'flavour'?
- Do different emotions share certain basic dimensions?

Wundt (1896), one of the founders of scientific psychology (see Chapters 1 and 3), believed that emotional experience can be described in terms of combinations of three dimensions – *pleasantness/unpleasantness*, *calm/excitement* and *relaxation/tension* (based on introspection). Schlosberg (1941) also identified pleasantness/unpleasantness, together with *acceptance/rejection* and *sleep/tension* (based on photographs of posed facial expressions). Osgood (1966), too, saw pleasantness as one dimension, plus activation and control, which correspond to the evaluative, activity and potency factors of the semantic differential (see Chapter 24), based on live emotional display.

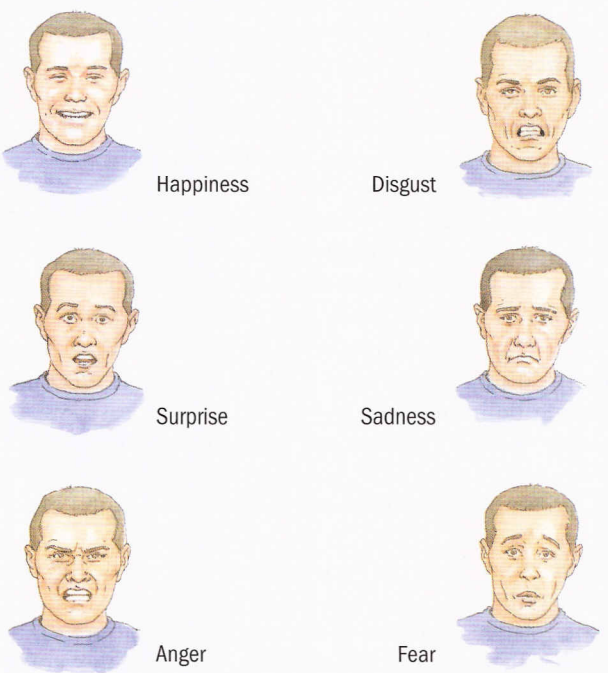


Figure 10.1 Six universal facial expressions

Ekman *et al.* (1972) and Ekman & Friesen (1975) identified six primary emotions: surprise, fear, disgust, anger, happiness and sadness (based on photos of posed facial expressions: see Figure 10.1). These are taken to be *universal* – that is, they are expressed facially in the same way, and are recognised as such, by members of diverse cultures. This suggests very strongly that they're *innate*.

Plutchik (1980) has proposed an emotion wheel (see Figure 10.2), in which eight basic/primary emotions (composed of four pairs of opposites) are shown inside the circle, with a further eight complex emotions on the outside. The primary emotions correspond to Ekman and Friesen's six, except that 'joy' and 'sorrow' are used for 'happiness' and 'sadness', respectively, plus acceptance and expectancy. Plutchik believes that the primary emotions are both biologically and subjectively distinct.

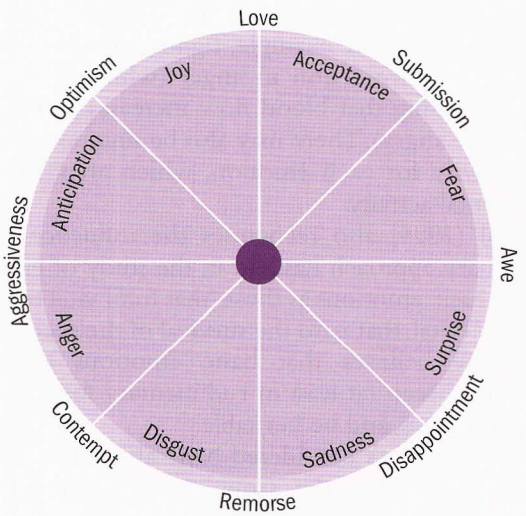


Figure 10.2 The emotion wheel. Plutchik's model arranges eight basic emotions within a circle of opposites. Pairs of these adjacent primary emotions combine to form more complex emotions noted on the outside of the circle. Secondary emotions emerge from basic emotions more remotely associated on the wheel (from Zimbardo, 1992)

'Basic' or 'primary' emotions

For Ekman (1994), 'basic' is meant to emphasise the role that *evolution* has played in shaping both the unique and the common features that emotions display, as well as their current function. Emotions evolved for their adaptive value in dealing with fundamental life tasks: they helped species to survive. Three major characteristics of emotions follow from this adaptive function.

1. there will be certain common elements in the contexts in which emotions are found to occur, despite individual and cultural differences in social learning
2. they're likely to be observable in other primates (while it's possible that there are certain emotions that are unique to humans, there's no convincing evidence that this is so)
3. they can be aroused so quickly that they start to happen before we're even aware of them:

> Quick onset is central to the adaptive value of emotions, mobilizing us quickly to respond to important events ... (Ekman, 1994)

So, emotions can occur with very rapid onset, through automatic appraisal (see below), with little awareness, and with involuntary changes in expression and physiology. Indeed, we often experience emotions as *happening to us*, rather than chosen by us.

We'll see below that there's recent evidence for distinctive patterns of autonomic nervous system (ANS) activity for various emotions. Ekman believes that these patterns are likely to have evolved because they support patterns of motor behaviour that were adaptive for each of these emotions, preparing the organism for quite different actions. For example, fighting might well have been the adaptive action in anger (which is consistent with the finding that blood flow increases to the hands when we're angry). There may also be unique patterns of CNS activity for each emotion, which aren't found in other mental activity.

Averill (1994) also recognises the influence that an evolutionary approach has had in the study of emotions, defining basic emotions as those 'that fulfil vital biological functions' (vital, that is, to the survival of the species). Like Ekman, he believes that basic emotions should be universal, be seen (at least in rudimentary form) in non-human primates, and be heritable.

However, what's considered basic also varies between cultures and within the same culture over time. For example, in the Middle Ages, hope was classified as a basic emotion, while today it's regarded as secondary (if it's considered an emotion at all) by most emotion theorists (Averill, 1994).

CRITICAL DISCUSSION 10.1: The social construction of emotions

- According to *social constructionism* (SC) (see Chapter 2), emotions are the products of culture. Human cultures influence the emotions by influencing their members' beliefs, values and social environments.
- Emotions may be understood as enmeshed within an entire system of beliefs and values, so they cannot exist independently of the culture.
- For example, *accida* is an emotion that existed in western cultures in medieval times but seems to have become extinct by about 1400. It involved a mixture of boredom with one's religious duties, attempting to put off carrying them out, sadness about one's religious failings, and a sense of loss of one's former religious enthusiasm. It disappeared during the Renaissance when values changed (Parrott, 2004).
- Today, someone facing the same religious 'crisis' is likely to feel guilt, an emotion related to a culture based on individual responsibility (rather than spiritual duty) (Harré & Finlay-Jones, 1986).
- According to Markus & Kitayama (1991), 'ego-focused' emotions (such as anger, frustration and pride) will be experienced more by people in *individualist* cultures with more *independent* selves. 'Other-focused' emotions (such as shame, belongingness and sympathy) will be more common in *collectivist* cultures with more *interdependent selves* (see Chapter 47).

Most basic of all are emotions that are *psychologically* basic: when people are asked to recount emotional episodes that evoked their 'true feelings', they typically describe incidents that reinforce or transform or enhance their sense of self (Morgan & Averill, 1992).

Components of emotion

For each distinct emotion, there are three components:

1. the *subjective experience* of happiness, sadness, anger, and so on
2. *physiological changes*, involving the autonomic nervous system (ANS) and the endocrine system, over which we have little, if any, conscious control; however, we may become aware of some of their effects (such as 'butterflies in the stomach', gooseflesh and sweating: see Chapter 4)
3. *associated behaviour* such as smiling, crying, frowning, running away and being 'frozen to the spot'.

The second and third components are sometimes categorised together as 'bodily reactions', with the former being called visceral and the latter skeletal. This distinction relates to the ANS and central nervous system (CNS) respectively. However, while running away is largely under voluntary (CNS) control, crying or sweating definitely aren't – yet in all three cases we infer another person's emotional state from this observable behaviour.

Different *theories* of emotion are distinguished by:

- how they see the relationship between the three components
- the relative emphasis given to each component
- how they see the relationship between the components and our *cognitive appraisal* or *interpretation* of the emotion-producing stimulus or situation.

Consistent with this is Parrott's (2004) definition of an emotion as;

> ... a reaction to personally significant events, where 'reaction' is taken to include biological, cognitive and behavioural reactions, as well as subjective feelings of pleasure or displeasure ...

THEORIES OF EMOTION

Darwin's evolutionary theory

The publication of *The Expression of Emotions in Man and Animals* (1872) represents the first formal attempt, by any scientist, to study emotion. Based largely on anecdotal evidence, Darwin argued that particular emotional responses (such as facial expressions) tend to accompany the same emotional states in humans of all races and cultures, even those who are born blind. (This claim is supported by Ekman and Friesen's research: see above). Like other human behaviours, the expression of human emotion is the product of evolution.

Darwin attempted to understand emotions by comparing them with similar behaviours in other species. Based on such comparisons, he proposed a theory of the evolution of emotional expression comprising three main ideas:

1. expressions of emotion evolve from behaviours that signal what an animal is likely to do next
2. if such behaviours benefit the animal that displays them, they'll evolve in ways that make them more effective as a form of communication, and their original function may be lost
3. opposing messages are often signalled by opposing movements or postures (the *principle of antithesis*).

Taking *threat displays* as an example:

- originally, facing one's enemies, rising up and exposing one's weapons were just the early components of animal combat
- once the enemies began to recognise these behaviours as signals of imminent aggression, those aggressors that could communicate their aggressive intent most effectively and scare off their victims without actually fighting had a distinct advantage; as a result, elaborate threat displays evolved and actual combat declined
- to be most effective, signals of aggression/submission must be clearly distinguishable, so they tended to evolve in opposite directions – for example, primates signal aggression by staring at one another, and submission by averting their gaze (Pinel, 1993).

ASK YOURSELF...

- What would you say is the 'common-sense' theory of emotion?
- Is it 'obvious' how emotional reactions are triggered (that is, what makes us have emotional experiences)?
- How does the experience of emotion relate to bodily/behavioural changes?
- Draw a diagram to summarise a typical 'emotional reaction' sequence of events.

The James–Lange theory

If there is a common-sense theory of emotion, it is that something happens that produces in us a subjective emotional experience and, as a result of this, certain bodily and/or behavioural changes occur. James (originally in 1878 and then in 1890) and Lange (1885, at first quite independently of James) turned this common-sense view on its head. They argued that our emotional experience is the *result*, not the cause, of perceived bodily changes.

To give an example used by James, the common-sense view says that we meet a bear, are frightened and run. The James–Lange theory maintains that we're frightened *because* we run! Similarly, 'We feel sorry because we cry, angry because we strike, afraid because we tremble ...'. According to James (1890):

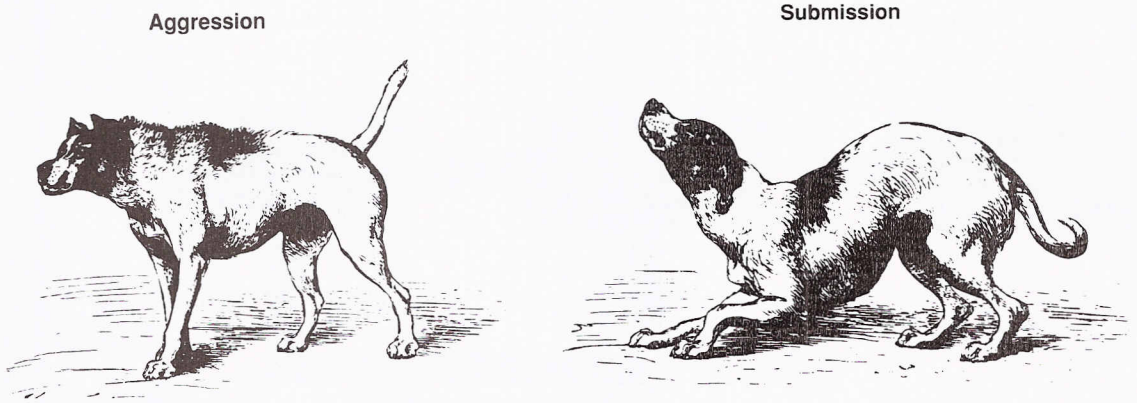


Figure 10.3 The two woodcuts from Darwin's 1872 book *The Expression of Emotions in Man and Animals*, which he used to illustrate the principle of antithesis. The aggressive posture features ears forward, back up, hair up and tail up; the submissive posture features ears back, back down, hair down and tail down

> ... the bodily changes follow directly the perception of the exciting fact, and ... our feeling of the same changes as they occur is the emotion.

The crucial factor in the James–Lange theory is feedback from the bodily changes (see Figure 10.4). We label our subjective state by inferring how we feel based on perception of our own bodily changes ('I'm trembling, so I must be afraid': see Chapter 18).

ASK YOURSELF...

- Do you agree with James?
- Does the emotional experience always *precede* the associated behaviour (as common sense would have it), or can the behaviour come first (as the James–Lange theory claims)?

You may be able to think of situations in which you've reacted in a fairly automatic way (for example, you've slipped coming down the stairs), and only *after* you've grabbed the banisters do you become aware of feeling frightened (and a little shaken). It's almost as if the sudden change in your behaviour has caused the fear, quite apart from why you grabbed the banisters in the first place.

Evaluation of the James–Lange theory

The theory implies that by deliberately altering our behaviour, we can control our emotional experiences. Try smiling – do you feel any happier? A crucial test (which James admitted would be very difficult to perform) would be to examine the emotional experience of someone who's completely anaesthetised, but not intellectually or motor impaired.

In the examples that James himself gives of inferring emotion from bodily changes (such as running away from a bear), he clearly attaches much more importance to *skeletal* as opposed to *visceral* changes. Parrott (2004) calls this the 'peripheral' approach. In this respect, the James–Lange theory probably differs from other theories, which usually mean 'visceral' when they say 'physiological'. Given this emphasis on skeletal changes, there are two important studies that support the James–Lange theory.

KEY STUDY 10.1 Listen to your heart and smile if you want to be happy (Valins, 1966; Laird, 1974)

- Valins provided male participants with feedback of their heart rate while watching slides of semi-nude *Playboy* pin-ups.
- The heart rate was in fact pre-recorded and programmed to increase in response to presentation of half the slides: participants *believed* the feedback was an indication of their true response. This is the *false feedback paradigm*.
- The slides associated with the apparent heart rate increase were judged to be more attractive than those associated with unchanged heart rate.
- Laird tested the *facial feedback hypothesis* by falsely informing 32 students that they were participating in an experiment to measure activity in facial muscles.
- Bogus electrodes were attached to their faces (as if to measure physiological response), and they were instructed to raise their eyebrows, contract the muscles in their forehead, and make other facial expressions. They didn't realise the emotional significance of what they were being asked to do.
- While this was going on, cartoon slides were projected onto a screen.
- Regardless of their content, participants rated the slides they'd seen while 'smiling' as funnier. They also described themselves as happier when 'smiling', angrier when 'frowning', and so on.

What the Valins and Laird studies suggest is that overt behaviour may cause subjective feelings without there being any obvious physiological arousal taking place: visceral changes may not be necessary. But neither Valins nor Laird attempted to measure any accompanying visceral changes. What if smiling triggers certain physiological changes? Might these be the real cause of our feeling happy, rather than the change in our facial

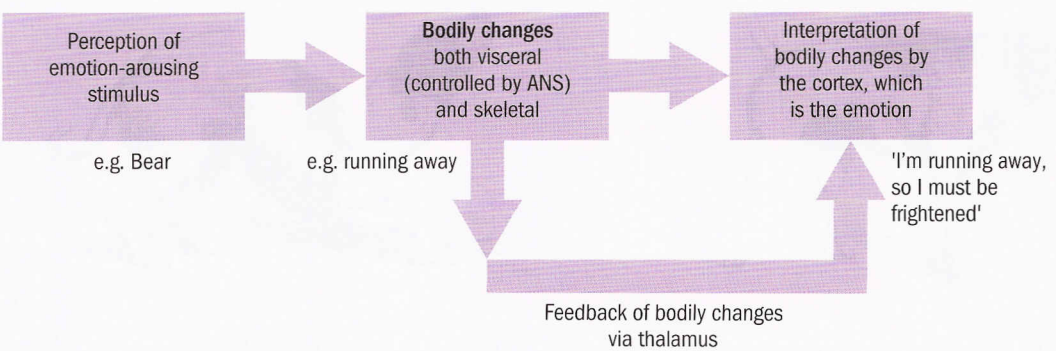


Figure 10.4 The James–Lange theory of emotion

muscles? And, if so, isn't this quite damaging to the James–Lange theory, which places so much emphasis on behavioural (skeletal) changes?

Levenson *et al.* (1990) asked participants to move particular facial muscles (to simulate the emotional expression of fear, anger, surprise, disgust, sadness and happiness). They also monitored several physiological responses controlled by the ANS while this was going on. They found that the simulated expressions *did* alter ANS activity. For example, anger increased heart rate and skin temperature, fear increased heart rate but decreased skin temperature, while happiness decreased heart rate without affecting skin temperature.

In the James–Lange theory, these bodily changes occur spontaneously, not consciously and deliberately. This makes it difficult to draw any firm conclusions from experiments like those of Valins and Laird. However, both studies strongly suggest that physiological arousal isn't sufficient to account for emotional experience. The fact that participants in the Valins study were prepared to infer emotion on the basis of (false) information about their reactions to stimuli suggests it may not even be necessary, and that cognitive factors may be sufficient (Parkinson, 1987).

According to Parrott (2004), for the body to 'know' how to respond appropriately, more than just 'perception of the exciting fact' must be involved. The event (e.g. the bear) must be interpreted or evaluated (or *appraised*) as a threat. The James–Lange theory fails to account for why the bear is seen as frightening in the first place! (We shall return to this issue below.)

Cannon's critique of the James–Lange theory

According to Cannon (1929), there are four major faults with the James–Lange theory:

1. it assumes that for each subjectively distinct emotion there's a corresponding set of physiological changes enabling us to label the emotion we're experiencing
2. even if this assumption were true, physiological arousal would still not be sufficient
3. physiological arousal may not even be necessary
4. the speed with which we often experience emotions seems to exceed the speed of response of the viscera, so how could the physiological changes be the source of sudden emotion?

Cannon argued that, 'the same visceral changes occur in very different emotional states and in non-emotional states'. In other words, the James–Lange theory was built on the (false) assumption that *different* emotional stimuli induce *different* patterns of ANS activity, and that perception of these different patterns results in different emotional experiences.

According to the Cannon–Bard theory, the ANS responds in the *same* way to all emotional stimuli: the sympathetic branch prepares the organism for flight or fight, through increased heart rate and blood pressure, pupil dilation, increased blood flow to the muscles, increased respiration and increased release of adrenaline and noradrenaline from the adrenal medulla (see Chapter 4). This means that there must be more to our emotional experience than simply physiological arousal, otherwise we wouldn't be able to tell one emotional state from another.

Evidence for physiological specificity

According to LeDoux (1994), this represents 'one of the most pesky problems in emotion research'. He points out that the emphasis of research has been on ANS activity, and this emphasis is partly due to Cannon's criticism of the James–Lange theory.

KEY STUDY 10.2 Be afraid: the Ax man's coming (Ax, 1953)

- In a famous (but ethically highly dubious) experiment, Ax measured various aspects of *electrodermal* (skin conductance), *electromyographic* (muscle action potential), *cardiovascular* and *respiratory* activity in participants who were deliberately frightened and made angry.
- They were told that they were participating in a study of *hypertension* (high blood pressure), and were asked to lie quietly on a couch while physiological measures were being taken.
- As electrodes were being attached, it was casually mentioned that the regular technician (who usually operated the technical equipment in an adjacent room) was sick, and a man who'd recently been fired for incompetence and arrogance was filling in for him. A few minutes later (after baseline measures had been recorded), either the anger condition occurred, followed by the fear condition, or vice-versa.
- In the *fear condition*, a continuous mild shock was administered to one finger (without any warning or explanation). The intensity gradually increased, until the participant complained. Then sparks were made to jump.
- In the *anger condition*, the technician (an actor) entered the room and spent five minutes checking the wiring. During this time, he jostled the participant, criticised the attending nurse and blamed the participant for causing a fault in the equipment.
- Of 14 different measures taken, Ax found that seven were significantly different between the two conditions. For example, *fear* was associated with increased heart rate, skin conduction level, muscle action potential frequency, and breathing rate (reflecting the effects of *adrenaline*). *Anger* was accompanied by increased diastolic blood pressure, frequency of spontaneous skin conduction responses and action potential size (reflecting the greater influence of *noradrenaline*).

While Ax's *methods* would be ethically unacceptable today, his findings have been confirmed by others (e.g. Frankenhaeuser, 1975). Schachter (1957) confirmed Ax's original findings that fear is influenced largely by adrenaline. But he also found that anger produces a mixed adrenaline–noradrenaline response, and pain produces a noradrenaline-like pattern. Schachter & Singer (1962) concluded that:

> Whether or not there are physiological distinctions among the various emotional states must be considered an open question. Any differences which do exist are at best rather subtle and the variety of emotion, mood and feeling states do not appear to be matched by an equal variety of visceral patterns.

This conclusion is consistent with Schachter's *cognitive labelling theory* (1964). This sees physiological arousal as necessary for emotional experience, but the nature of the arousal as irrelevant (see below, pages 162–166).

Less extreme and controversial methods than Ax's include:

- the *directed facial action method*, in which participants are instructed to make the facial expressions characteristic of various emotions while ANS activity is recorded
- the *relived emotion method*, in which participants are asked to think about previous emotional experiences while these measures are being made.

Based on a series of experiments using both kinds of method, Levenson (1994) maintains that it's a 'myth' that every emotion is autonomically different. It seems far more likely that reliable differences will only be found between emotions for which there are different associated typical behaviours, and even among this smaller set, it's quite unlikely that they won't share *some* features.

Box 10.1 The physiology of positive and negative emotions

- Levenson *et al.* (1990) compared anger, disgust, fear, sadness (*negative emotions*), plus happiness (*positive emotion*) and surprise. They identified a small number of fairly reliable differences in patterns of ANS activity, both between the negative emotions, and between the negative emotions as a group and happiness.
- For example, anger, fear and sadness all produce larger increases in heart rate than disgust, while anger produces a larger increase in finger temperature than fear does.
- These differences have been found consistently across populations differing in occupation, age (from young people to 71–90-year-olds), culture (Americans and Minangkabau males living in Western Sumatra, Indonesia) and gender, as well as across the directed facial action and relived emotion methods.
- As far as positive emotions are concerned, Levenson (1994) believes that they might not be associated with any particular pattern of behaviour or, if they are, it would be characterised by low activity, making little metabolic demand on the ANS:

  Instead of having distinctive autonomic signatures ... positive emotions might be associated with a state of physiological quiescence ... their primary function might be to 'undo' the autonomic activation produced by negative emotions ... to restore the organism to its pre-arousal state in a more efficient and rapid manner than would be the case if the negative emotions were allowed to run their natural course.

- What this implies is that, at least in our present state of knowledge, we cannot draw general conclusions about the specificity of the body's response to emotional stimuli – it depends partly on which emotion (positive or negative) we're talking about.

ASK YOURSELF...

- Given James' emphasis on skeletal, as opposed to visceral, changes, could it be argued that Cannon's first criticism is not strictly relevant?
- Since we're almost completely unaware of visceral changes, could James have claimed that 'visceral feedback' *is* the emotion?

Even if there were identifiable patterns of physiological response associated with different subjective emotions, Cannon argued that such physiological changes themselves don't necessarily produce emotional states. In other words, physiological arousal isn't sufficient. This was demonstrated by Marañon (1924). However, a study by Hohmann (1966) suggests that, although physiological changes aren't sufficient for the experience of 'full-blooded' emotions, they may still be necessary.

KEY STUDY 10.3 As if emotion were just adrenaline (Marañon, 1924)

- Marañon injected 210 people with adrenaline; 71 per cent said they experienced only physical symptoms, with no emotional overtones at all; most of the rest reported 'as if' emotions.
- The few who experienced genuine emotion had to imagine – or remember – a highly emotional event.

KEY STUDY 10.4 Real emotions need an intact ANS (Hohmann, 1966)

- Hohmann studied 25 adult males with spinal cord injuries, who suffered corresponding ANS damage.
- They reported significant changes in the nature and intensity of certain emotional experiences, especially anger, fear and sexual feelings.

- Generally, the higher the lesion in the spinal cord, the greater the disruption of visceral responses, and the greater the disturbance of normal emotional experiences.
- Like Marañon's participants, they reported 'as if' emotions – a 'mental kind of anger', for example.

According to Schachter (1964), what Marañon's and Hohmann's participants reported is precisely what would be expected from his cognitive labelling theory, which sees emotional experience as a joint function of cognitive and physiological factors (see below).

The Cannon–Bard theory

Cannon (1927) removed the sympathetic nervous system of cats, and Sherrington (1900) severed the spinal cord and vagus nerves of dogs. In both cases, feedback from the viscera to the brain was prevented, but the animals showed apparently normal emotional reactions. Cannon took these findings to mean that physiological changes may not even be necessary for emotional experience. In addition, Dana (1921) studied a patient with a spinal cord lesion: despite having no sympathetic functioning and extremely limited muscular movement, the patient showed a range of emotions, including grief, joy, displeasure and affection. Similarly, Chwalisz *et al.* (1988) found that people with spinal cord injuries (who have no sensation in much of their body) experience emotion as intensely as before the injury, as intensely as 'normal' people, and as intensely as people with spinal cord injuries that don't block bodily sensations. These findings seem to support Cannon's view.

ASK YOURSELF...

- Is it valid to generalise from the study of cats' and dogs' emotional reactions to human beings' emotional *experience*, as Cannon did?
- Is it valid to generalise from a single case, as in Dana's study? (See Chapter 42.)

So what is different about Cannon's theory (known as the Cannon–Bard theory)? As Figure 10.5 shows, the subjective emotion is quite *independent* of the physiological changes involved. The emotion-producing stimulus is processed by the thalamus. This sends impulses to the cortex, where the emotion is consciously experienced, and to the hypothalamus, which sets in motion certain autonomic physiological changes.

An evaluation of the Cannon–Bard theory

Cannon also argued that, because we often feel emotions quite rapidly, yet the viscera are quite slow to react, how could the physiological changes be the source of such sudden emotion (as required by the James–Lange theory)? However, although the viscera aren't sensitive to certain kinds of stimulation (such as burning and cutting), they provide much better feedback than Cannon suspected. Many visceral changes can occur sufficiently quickly that they *could* be the causes of feelings of emotion (Carlson, 1992).

Pinel (1993) advocates a position falling *between* the extreme views represented by the Cannon–Bard and James–Lange theories. On the one hand, the Cannon–Bard view that the ANS responds in the same way to all emotional stimuli is clearly incorrect: several differences have been well documented. On the other hand, there's insufficient evidence to make a strong case for the James–Lange view that each emotion is characterised by a different pattern of ANS activity.

Schachter's cognitive labelling theory

According to Schachter (1964), Cannon was wrong in thinking that bodily changes and the experience of emotion are independent, and the James–Lange theory was mistaken in claiming that physiological changes cause the feeling of emotion. While sharing the James–Lange belief that physiological changes *precede* the experience of emotion, Schachter argues that we have to *decide* which particular emotion we're feeling. The label we attach to our arousal depends on what we attribute that arousal to.

Schachter is saying that physiological arousal (factor 1) is *necessary* for the experience of emotion, but the nature of arousal is immaterial – what's important is how we *interpret* that arousal (factor 2). Hence, the theory is also known as the *two factor theory of emotion*. The classic experiment that demonstrates this cognitive theory of emotion is Schachter & Singer's (1962) 'adrenaline experiment' (see Key Study 10.5).

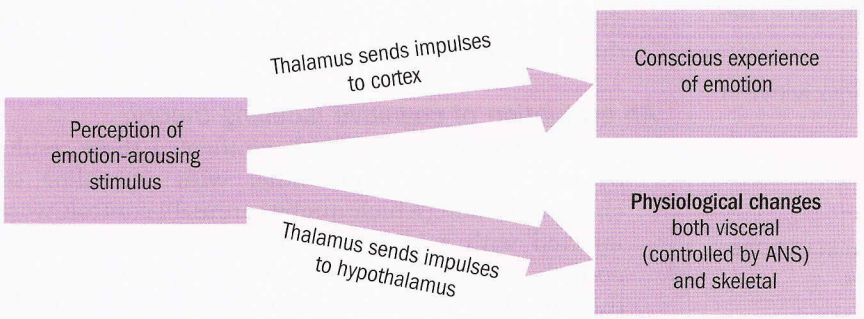


Figure 10.5 The Cannon–Bard theory of emotion

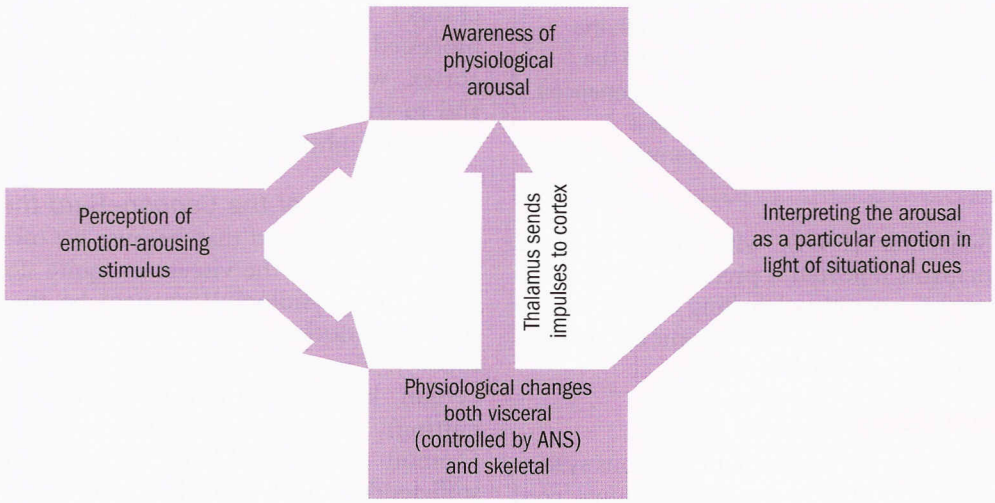


Figure 10.6 Schachter's cognitive labelling theory (or two-factor theory)

KEY STUDY 10.5 Schachter & Singer's (1962) adrenaline experiment

Participants were given what they were told was a vitamin injection, in order to see its effect on vision. In fact, it was adrenaline, and they were tested under one of four conditions.

1. *Group A* participants were given *accurate information* about the side-effects of the injection (palpitations, tightness in the throat, tremors and sweating).
2. *Group B* participants were given *false information* about the side-effects (itching and headache).
3. *Group C* participants were given *no information* about the side-effects (true or false).
4. *Group D* (control group) participants were given a saline injection (and otherwise treated like group C).

Before being given a 'vision test', each participant (one at a time) sat in a waiting room with another 'participant' (a stooge of the experimenters). For half the participants in each condition, the stooge acted *either* in a happy, frivolous way (making paper aeroplanes, laughing out loud and playing with a hula-hoop: *euphoria condition*), *or* very angrily (eventually tearing up the questionnaire which he and every participant was asked to complete: *anger condition*). (In fact, the group B condition was run only with a euphoric stooge).

Participants' emotional experience was assessed in two ways:

1. observers' ratings of the degree to which they joined in with the stooge's behaviour
2. self-report scales.

As predicted:

- groups A and D were much less likely to join in with the stooge or to report feeling euphoric or angry
- groups B and C were much *more* likely to assume the stooge's behaviour and emotional state.

ASK YOURSELF...

- Can you account for these findings in terms of Schachter's cognitive labelling/two factor theory?

Schachter and Singer were testing three inter-related hypotheses regarding the interaction between physiological and cognitive factors in the experience of emotion.

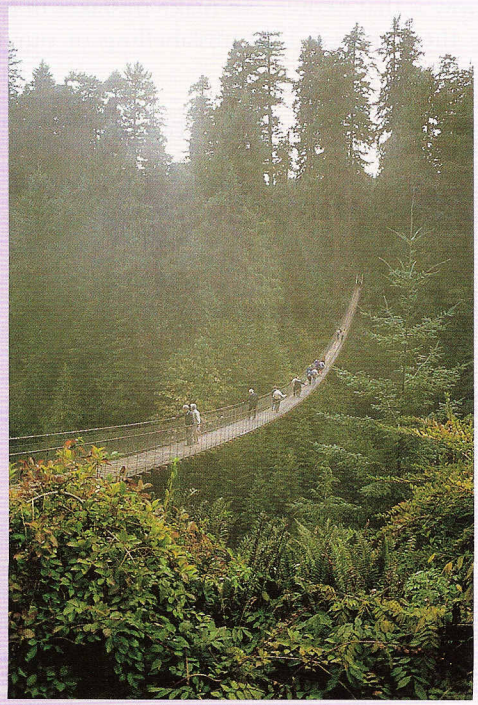
1. If we experience a state of physiological arousal for which we have no immediate explanation, we'll 'label' this state and describe it in terms of the cognitions available. So, precisely the same state of arousal could receive different labels (e.g. 'euphoria'/'anger' – groups B and C). (Physiological arousal *and* cognitive labelling are necessary.)
2. If we experience a state of physiological arousal for which we have a completely appropriate explanation (e.g. 'I've just been given an injection of adrenaline'), we'll 'label' this state accordingly (group A).
3. Given the same circumstances, we'll react emotionally or describe our feelings as emotions only to the extent that we experience a state of physiological arousal (all three groups). (Physiological arousal is necessary.)

An evaluation of cognitive labelling theory

◎ Schachter & Wheeler (1962) confirmed these results by injecting participants either with adrenaline or chlorpromazine (which inhibits arousal); controls were injected with a placebo. While watching a slapstick comedy, the adrenaline participants laughed more, and the chlorpromazine participants less, than the controls.

KEY STUDY 10.6 Falling in love on a suspension bridge (Dutton & Aron, 1974)

- The participants were unsuspecting males, aged 18–35, visiting the Capilano Canyon in British Columbia, Canada.
- An attractive female interviewer approached the men and asked them questions as part of a survey on the effects of scenery on creativity. One of the things they were asked to do was to invent a short story about an ambiguous picture of a woman (a picture from the Thematic Apperception Test/TAT: see Chapter 9). This was later scored for sexual content, taken to reflect the men's sexual attraction towards the interviewer.
- Some men were interviewed on an extremely unstable suspension bridge, 5 feet wide, 450 feet long, composed of wooden boards attached to wire cables, running from one side of the canyon to the other. This bridge, 230 feet above the canyon, tended to sway, tilt and wobble, giving the impression that one could fall over the side at any moment; it had only very low handrails of wire cable for support (*high arousal condition*).
- Other men were interviewed on a solid wooden bridge upstream, a mere 10 feet above a shallow rivulet, with high handrails and without any swaying or tilting (*low arousal condition*).
- As predicted, the stories of the men in the high arousal condition contained significantly more sexual imagery.
- The interviewer also invited the men to call her if they wanted more information about the research. Again in line with predictions, four times as many men from the high arousal condition called her compared with the low arousal condition.



The Capilano River bridge

- To show that arousal was the independent variable, Dutton and Aron also arranged for another group of men to be interviewed ten or more minutes *after* crossing the suspension bridge. By this time, the symptoms of their physical arousal should have been declining. These non-aroused men *didn't* show the signs of sexual arousal shown by those in the high arousal condition.

◎ Dutton and Aron's study confirms Schachter's claim that the autonomic arousal that accompanies all emotions is similar, and that it's our *interpretation* of that arousal that matters – even though this sometimes results in our misidentifying our emotions. Dutton and Aron's suspension bridge participants seemed to be *mislabelling* their fear as sexual attraction to the interviewer.

ASK YOURSELF...

- What do you think the outcome would have been if the interviewer had been male?

◎ The focus of Schachter's model is an atypical state of affairs, where the participant is unsure about the cause of arousal (groups B and C). But Schachter (1964) admitted that we usually *are* aware of a precipitating situation prior to the onset of arousal (which usually takes one to two seconds to reach consciousness). So, it's normally perfectly obvious to us what aspects of the situation have provoked the emotion. However, even here the meaning of the emotion-inducing circumstances requires *some* cognitive analysis before the emotion can be labelled.

◎ Schachter claims that the *quantitative* aspect of emotion can arise without cognitive mediation ('Am I in a state of emotional arousal?': as in Valins' study). But the *qualitative* aspect requires prior cognition ('What emotion is it I am experiencing?': as in Laird's study). Mandler (1984) has called Schachter's theory the *'jukebox' theory* – arousal is like the coin that gets the machine going, and cognition is the button pushed to select the emotional tune.

◎ According to Parkinson (1987), the view that affect (emotion) is post-cognitive is now probably the most popular attitude among emotion theorists. But even accepting the important role of cognitive factors, is our emotional experience really as labile or malleable as Schachter claims? Are environmental cues really as easily accepted as the basis for inferences about our own feelings (Fiske & Taylor, 1991)?

◎ Using the original Schachter and Singer paradigm, several studies (Marshall & Zimbardo, 1979; Maslach, 1979; Plutchik & Ax, 1967) have concluded that when we try to explain a state of arousal, we don't merely use others' behaviour as a guide to what we're feeling.

We call on many other sources of information as well, particularly our own past history: we search for previous occasions on which we felt this arousal state to explain why it's occurring now. While other people's behaviour might suggest – or even dictate (through conformity) – how we should *behave* in that situation, it doesn't tell us how we're *feeling*. At the very least, others' behaviour must in some way be appropriate (Weiner, 1992).

- These later studies also found that people who don't have a ready-made explanation for their adrenaline-produced arousal are more likely to attach a *negative* emotional label to it (such as unease or nervousness, similar to 'free-floating anxiety'). This suggests that emotional lability *isn't* as great as Schachter maintains: unexplained arousal has a negative, unpleasant quality about it.

The role of attribution

According to Schachter, group A participants in the adrenaline experiment could attribute their arousal to the injection (they had a ready-made explanation and so didn't need an emotional explanation). But for those in groups B and C, no such ready-made explanation was available, and so the stooge's behaviour was used as a cue for explaining their own state of arousal (as either euphoria or anger).

Taking one of James's original examples (running away from a bear), the original cause of the bodily reactions (the bear) is *irrelevant*. This is because our emotional experience is based on feedback from our bodily reactions (running away). But for Schachter, it's what we attribute our arousal to that *determines* the label we give to it. In the adrenaline experiment, the initially unexplained arousal is attributed to the (rather extreme) behaviour of the confederate, and so is labelled euphoria or anger accordingly.

Similarly, the men in Dutton and Aron's experiment who were tested on the swaying suspension bridge, were unaware of the 'real' cause of their arousal. They attributed it instead to the female interviewer. We know that arousal was the independent variable, and it's highly likely that if the attractive interviewer hadn't approached them, they'd have labelled their arousal 'fear', because it would have been attributed to a frightening stimulus (the bridge).

What all these examples show is that the cognitive labelling theory is essentially based on *attributional principles* (see Chapter 23). This represents a major form of influence that Schachter's theory has had on cognitive theories of emotion in general.

According to Weiner (1986, 1992), certain kinds of attribution produce specific emotions. For example, success produces a very general positive feeling (such as happiness), while failure produces a very general negative feeling (such as sadness). But if the outcome (either success or failure) is either very different from what's expected or has very important consequences, we try to figure out the reasons (or causes) for the outcome. These reasons will take the form of *internal* or *external* attributions, which in turn can be broken down into *controllable* or *uncontrollable*. It's the combination of internal/external and controllable/uncontrollable that will determine specific emotional responses (see Figure 10.7).

The misattribution effect

What the adrenaline and the suspension bridge experiments show is that people can make mistakes in how they attribute their arousal. This mislabelling of our feelings,

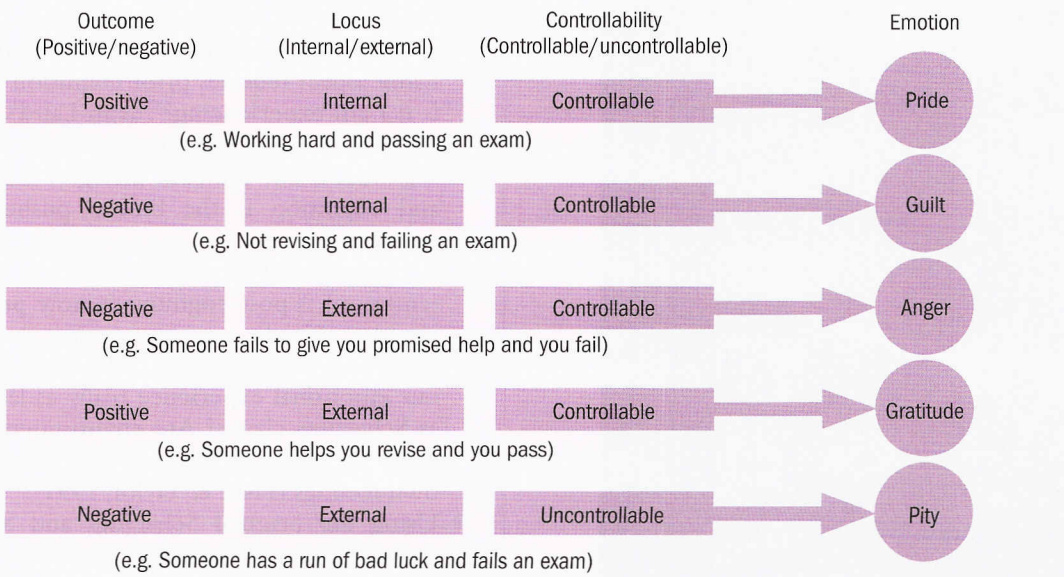
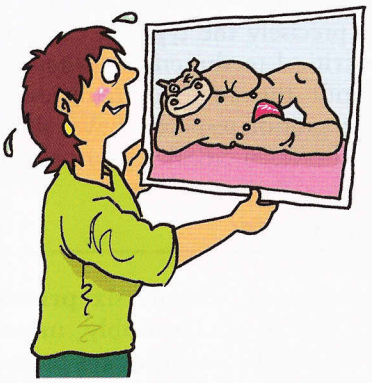


Figure 10.7 Examples of how particular kinds of attribution can produce particular emotions (based on Weiner, *Human Motivation: Metaphors, Theories and Research*. Copyright 1992, reprinted by permission of Sage Publications, Inc.)

and drawing mistaken conclusions about the causes of those feelings, is called the *misattribution effect* (Ross & Nisbett, 1991).

As part of their suspension bridge experiment, and in a later experiment, Dutton & Aron (1974, 1989) invited male students to participate in a learning experiment. After meeting an attractive female partner, half the students were frightened with the news that they would be suffering some 'quite painful' electric shocks. Before the experiment was due to begin, they were given a short questionnaire 'to get some information on your present feelings and reactions, since these often influence people on the learning task'. Asked how much they would like to date and kiss their partner, the aroused (frightened) men expressed more intense attraction than the non-frightened men.

By definition, the female partner was sexually attractive, and so it was far easier for the men to transfer their arousal to her, and to mislabel it as sexual arousal. In this way, she represented a *salient* or *credible* source of arousal (Olson & Ross, 1988). (She also represented a clear, unambiguous source of arousal.) Similarly, if female participants are shown slides of attractive male nudes, it may be easy to alter their preferences among the pictures based on false heart rate feedback, whereas this would be very difficult to achieve if the male nudes were replaced by slides of naked hippos! (This is a deliberately modified version of an example given by Taylor *et al.*, 1994.)



Cognitive appraisal or affective primacy?

When evaluating the James–Lange theory earlier, we noted that it fails to account for why a bear, say, should make us run away. In other words, it fails to take into account our *appraisal* of the emotional 'stimulus'. Appraisal is the thinking that leads to emotion (Parrott, 2004), and appraisal theory is a development of Schachter's cognitive labelling theory.

According to Lazarus (1982), some degree of cognitive processing is an essential prerequisite for an affective reaction to a stimulus to occur, and is an integral feature of all emotional states.

KEY STUDY 10.7 Subincision in the Arunta (Speisman *et al.*, 1964)

- Participants saw a film (*Subincision in the Arunta*), which shows aboriginal boys undergoing circumcision as part of a puberty rite.
- The boys are seen having their penises cut with a jagged flint knife. This usually causes high levels of stress in viewers of the film (and probably in the boys too!). The soundtrack was manipulated, so that:
  - (i) the pain, jaggedness of the knife, and so on, were emphasised (*trauma*)
  - (ii) the boys' anticipation of entering manhood was emphasised (*denial*)
  - (iii) the emotional elements were ignored and the traditions of the aboriginal people were emphasised (*intellectualisation*)
  - (iv) there was no commentary (*silent control*).
- As predicted, arousal (measured by GSR and heart rate) was highest in the trauma condition, next highest in the control condition and lowest in the other two.
- What we tell ourselves about external situations (*cognitive appraisal*) influences our level of arousal.

For Lazarus,

> ... emotion results from evaluative perception of a relationship (actual, imagined or anticipated) between a person (or animal) and the environment.

He proposes that cognitive appraisal invariably *precedes* any affective reaction, although it doesn't have to involve any conscious processing. Zajonc (1984) argues that there's generally little direct evidence of either the existence or nature of such preconscious cognitive processing (although the study of *subliminal perception* suggests otherwise: see Chapter 15). Zajonc (1980a) argues that cognition and affect operate as *independent* systems, and an emotional response *may* precede cognitive processes under certain circumstances. For example, we may meet someone very briefly and form a positive or negative impression, despite not being able to remember any detailed information about them later (such as hair or eye colour: Eysenck & Keane, 1990).

ASK YOURSELF...

- Try to formulate some arguments against Zajonc's claim that cognition and affect are separate, independent systems.

Parrott (2004) asks how it's possible to call certain emotions 'irrational' if emotions don't intrinsically entail beliefs. Also, most emotions are 'about' something – and this is cognitive. The most important problem for Zajonc

is that how we think about a situation obviously influences how we feel (for example, *why* we think someone behaved as they did determines whether we feel angry or sympathetic: see Chapter 23).

Zajonc seems to overestimate the amount of cognitive processing that Lazarus and other cognitive appraisal theorists are claiming. For example, Lazarus simply argues that some minimal cognitive analysis at some level always precedes emotional experience. But this can be quite automatic, and so 'cognitive appraisal' is quite consistent with the sense of 'immediacy' that so much emotional experience has (and which Frijda (1994) sees as a characteristic of emotion).

So, what is an emotion?

Clore (1994) defines emotions as *mental states*. Neither physiological arousal nor feeling states provide the best way of trying to capture the nature of an emotion. Emotions are special kinds of feelings, namely those that we judge have an *emotional cause*. This is why feelings that are generated artificially by electrical stimulation or hormone injection (or some other non-cognitive means) *aren't* emotions. (see Key Study 10.3). For Clore, emotion terms seem to refer to something beyond feelings, to psychological states of which feelings are perhaps a necessary but not a sufficient condition.

Many of the examples Zajonc gives of emotion without cognition (*affective primacy* or 'preferences need no inferences') don't seem to describe emotional states at all. For example, when someone leaps out in front of you and shouts 'Boo!', your physiological and bodily response (including your facial expression) would be more accurately described as a *startle reflex* than fear.



"I know real men cry these days, Gerald, but not for getting soap in their eyes."

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According to Scherer (1994), the classic debate between Lazarus and Zajonc, which had a major impact on the psychology of emotion during the 1980s, was mostly concerned with the level of processing involved, not whether *any* processing took place. This, in turn, revolved around the definition of 'cognition'.

What is cognition?

If 'cognition' means or includes basic sensory processing, then most, if not all, emotions will have some cognitive component. However, LeDoux (1994) and Panksepp (1994), both biologists, suggest that the brain circuitry underlying emotion and cognition are different. Cognition is seen as depending on the neocortex and hippocampus (see Chapter 4). If 'cognition' is restricted to processes involving these brain areas, then emotion *can* occur without cognition, since non-humans with extensive lesions in these structures still display emotional responses.

CONCLUSIONS

According to Davidson & Ekman (1994), the older Lazarus/Zajonc debate has advanced considerably. Most theorists now acknowledge that emotion can be elicited in the absence of conscious cognitive mediation. If a broad view of cognition is taken, most would also agree that some cognitive processing is required for most emotion. Dalgleish (1998) maintains that the view that cognition is an integral part of emotion is predominant within the psychology of emotion. The challenge is to specify more precisely the types of cognitive processing that may be critical to the emotion-generation process, and to identify the neural circuitries that underlie emotion and cognition respectively. We also need to study the *interactions* between emotion and cognition.

CHAPTER SUMMARY

- Ekman and Friesen identify six **primary**, universal emotions, which are probably innate. Plutchik's 'emotion wheel' also incorporates primary emotions, but distinguishes these from complex emotions.
- An **evolutionary** approach to understanding primary or **basic** emotions includes considering their current function. But 'basic' emotions differ between cultures and over time within the same culture. They may be **psychologically** or **culturally** basic – not biologically.
- According to **social constructionism** (SC), emotions are **culturally** and **historically relative**. They exist within a system of beliefs and values, which differs between cultures and changes over time.
- For each distinct emotion there are the **subjective experience**, **physiological changes**, **associated behaviour** and **cognitive appraisal** of the emotion-producing stimulus/situation.

- Darwin saw emotional behaviours (such as threat displays) as having evolved because they benefited those animals that used them effectively (they removed the need for actual combat).
- The **James–Lange theory** turns the common-sense theory of emotion on its head, by claiming that our emotional experience is the result of perceived bodily changes – in particular, skeletal changes.
- Studies by Valins (using the **false feedback paradigm**) and Laird (testing the **facial feedback hypothesis**) support the James–Lange theory, although they fail to take into account any visceral changes that may be taking place. They both suggest that physiological arousal isn't sufficient to account for emotional experience.
- Cannon criticised the James–Lange theory for assuming that different emotional states are associated with different patterns of ANS activity. The **Cannon–Bard theory** claims that the ANS responds in the same way to all emotional stimuli.
- Using the **directed facial action** and the **relived emotion methods**, Levenson reports physiological differences between anger, disgust, fear and sadness. Both the James–Lange and Cannon–Bard theories take too extreme a view regarding **physiological specificity**, and the truth lies somewhere in between.
- Marañon's and Hohmann's studies support Cannon's claim that physiological arousal isn't sufficient for emotional experience, although they indicate that it is necessary. However, Cannon's own study of cats, plus those of Sherrington and Dana, suggest that it might not even be necessary.
- According to Schachter's **cognitive labelling theory**, the experience of emotion depends both on **physiological changes** and the **interpretation** of those changes. Cannon, therefore, was mistaken in claiming that emotional experience and bodily changes are independent.
- Schachter and Singer's 'adrenaline experiment' demonstrates that while physiological arousal is necessary, the nature of the arousal is irrelevant. What's crucial is the **cognitive label** we give that arousal.
- Dutton and Aron's 'suspension bridge' experiment supports Schachter's theory, but also shows that how we label our arousal can be mistaken (the **misattribution effect**).
- Failure to replicate the adrenaline experiment suggests that emotional experience is much less malleable than Schachter claims, and that unexplained arousal is likely to be interpreted negatively.
- Cognitive labelling theory is essentially based on **attributional principles**. Several attributional theories of emotion have grown out of it, such as Weiner's theory.
- Lazarus's **cognitive appraisal theory** claims that some minimal cognitive analysis always precedes emotional experience, although this can be unconscious and automatic. Zajonc's **affective primacy theory** claims that emotional responses can occur without any cognition being involved.
- The basic disagreement between Lazarus and Zajonc seems to be about the **level of processing** involved, rather than whether or not any cognitive processing takes place. This, in turn, centres around the definition of 'cognition'.

Links with other topics/chapters

- The study of emotion has always been influenced by an *evolutionary approach* (Chapter 2).
- Schachter's cognitive labelling theory has had a major impact on cognitive theories of emotion in general. One major form of this influence relates to the role of *attribution*, including the *misattribution effect* (Chapter 23).
- Abramson & Martin (1981) grafted attributional principles onto Seligman's (1975) theory of *learned helplessness* (Chapter 11) in an attempt to explain *major depressive disorder/clinical depression* (Chapter 44).
- The way we account for other people's behaviour (and the resulting emotions we experience) can influence *helping behaviour/bystander intervention* (Chapter 30).
- The experience of certain kinds of negative emotions is what we commonly mean by *stress*, and Lazarus's appraisal theory is often discussed in this context (Chapter 12).

What is learning?
- Learning versus performance
- Learning and other abilities
- Some basic questions about learning

Behaviourist approaches
- Classical conditioning: why do dogs drool over bells?
  - *Higher-order conditioning*
  - *Generalisation and discrimination*
  - *Extinction and spontaneous recovery*
  - *Classical conditioning and human behaviour*
  - *Classical conditioning and phobias*
- Operant conditioning: why do rats press levers?
  - *Thorndike's law of effect*
  - *Skinner's 'analysis of behaviour'*
  - *Reinforcers and reinforcement*
  - *Primary and secondary reinforcers*
  - *Schedules of reinforcement*
  - *Shaping: the reinforcement of successive approximations*
  - *Negative reinforcement: escape and avoidance learning*
  - *Punishment*
  - *The antecedents of behaviour: stimulus control*
- Does conditioning work in the same way for all species?
  - *Biological constraints on conditioning*
- The role of cognition in conditioning
  - *Classical conditioning*
  - *Operant conditioning*

Cognitive approaches
- Tolman's cognitive behaviourism
- Insight learning
- Gagné's hierarchy of learning
- Learning sets and transfer of learning

Conclusions: transfer of learning

Chapter summary

Links with other topics/chapters

11

LEARNING AND CONDITIONING



INTRODUCTION AND OVERVIEW

We've seen in earlier chapters how American psychology in particular was dominated by *behaviourism* for much of the first half of the twentieth century. Given the central role of learning in philosophical behaviourism, it's hardly surprising that the topic of learning itself should be central within psychology as a whole.

The concept of learning is a good example of the discrepancy between the everyday, common-sense use of a term and its technical, scientific use (see Chapter 1). In everyday conversation, the emphasis is usually on *what* is learned (the *end product*), such as learning to drive a car, use the Internet or speak French. But when psychologists use the term, their focus is on *how* the learning takes place (the learning *process*).

When the focus is on the end product, we generally infer that the learning is *deliberate*. For example, we pay for driving lessons that will help us, eventually, to acquire a driving licence. But, for psychologists, learning can take place without a 'teacher'. We can learn, for example, by merely *observing* others, who may not even know they're being observed, let alone trying to teach us anything. Learning can also happen without other people being involved at all, as when we observe recurring environmental events ('thunder always follows lightning').

So, the concept of learning as used by psychologists is very broad. Partly for this reason, psychologists disagree as to exactly what's involved in the learning process. Watson, the founder of behaviourism, was the first psychologist to apply Pavlov's concept of the *conditioned reflex/response* to human behaviour. A more active view of learning was taken by Thorndike, whose work formed the basis of Skinner's *operant conditioning*. Skinner's contribution, above all others, made behaviourism such a force within psychology as a whole (see Chapter 2).

WHAT IS LEARNING?

Learning is a *hypothetical construct*: it cannot be directly observed, but only inferred from observable behaviour. For example, if a person's performance on a task at time 1 differs from performance on the task at time 2, we might infer that learning has taken place. But if that change is observed just once, we may be much more hesitant about making such an inference. Learning, therefore, normally implies a fairly *permanent* change in a person's behavioural performance. Again, temporary fluctuations in behaviour can occur as a result of fatigue, drugs, temperature changes, and so on, and this is another reason for taking permanence as a minimum requirement for saying that learning has taken place.

However, permanent changes in behaviour can also result from things that have nothing to do with learning, such as the effects of brain damage on behaviour, or the changes associated with puberty and other maturational processes. So, if a change in behaviour is to be counted as learning, the change must be linked to some kind of *past experience* (regardless of whether there was any attempt to bring about that change).

For these reasons, psychologists usually define learning as 'a relatively permanent change in behaviour due to past experience' (Coon, 1983) or 'the process by which relatively permanent changes occur in behavioural potential as a result of experience' (Anderson, 1995a).

Learning versus performance

Anderson's definition has one major advantage over Coon's, namely that it implies a distinction between learning *(behavioural potential)* and performance *(actual behaviour)*.

ASK YOURSELF...

- What things have you learned to do/learned about that you're not actually doing/thinking about right now?

If you can swim, you're almost certainly not doing so as you read this chapter – but you could readily do so if faced with a pool full of water! So what you could do (potential behaviour based on learning) and what you're actually doing (current performance) are two different things. Ultimately, of course, the only proof of learning is a particular kind of performance (such as exams). Performance can fluctuate due to fatigue, drugs and emotional factors, and so is much more variable than learning, which is more permanent. (Exams come to mind again – many students have left an exam knowing what they could not demonstrate during the exam itself.)

Learning and other abilities

Howe (1980) defines learning as 'a biological device that functions to protect the human individual and to extend his capacities'. In this context, learning is neither independent of, nor entirely separate from, several other abilities, in particular memory and perception. Indeed, learning and memory may be regarded as two sides of the same coin (see Chapter 17).

According to Howe, learning is also *cumulative*: what we learn at any time is influenced by our previous learning. Developmental and learning processes are closely interlinked. Also, most instances of learning take the form of adaptive changes, whereby we increase our effectiveness in dealing with the environment. Similarly, Anderson (1995a) defines learning as 'the mechanism by which organisms can adapt to a changing and nonpredictable environment'.

Some basic questions about learning

While it's generally agreed by psychologists that learning is *relatively permanent* and *due to past experience*, there's much less agreement about exactly what changes when learning takes place, and what kinds of past experience are involved. Put another way, how do the changes occur and what mechanisms are involved? One important issue that divides psychologists is the extent to which they focus on the *overt, behavioural changes* as opposed to the *covert, cognitive changes*.

BEHAVIOURIST APPROACHES

Skinner (1938) made the crucial distinction between *respondents* (or *respondent behaviour*), which are triggered automatically by particular environmental stimuli, and *operants* (or *operant behaviour*), which are essentially voluntary. A related distinction is that between *classical* or *respondent (Pavlovian) conditioning* and *operant* or *instrumental (Skinnerian) conditioning*.

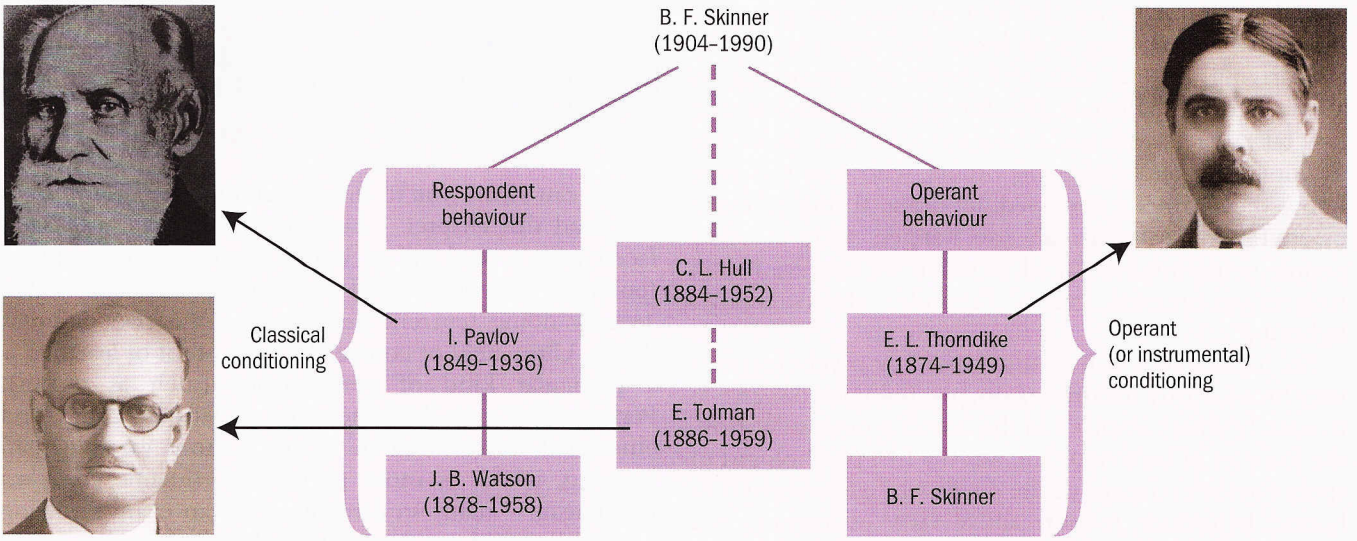


Figure 11.1 Major figures in the behaviourist (learning theory) tradition

Classical conditioning: why do dogs drool over bells?

Ivan Pavlov was a physiologist interested in the process of digestion in dogs. He was awarded the Nobel Prize in 1904 (the year Skinner was born). He developed a surgical technique for collecting a dog's salivary secretions. A tube was attached to the outside of its cheek, so the drops of saliva could easily be measured.

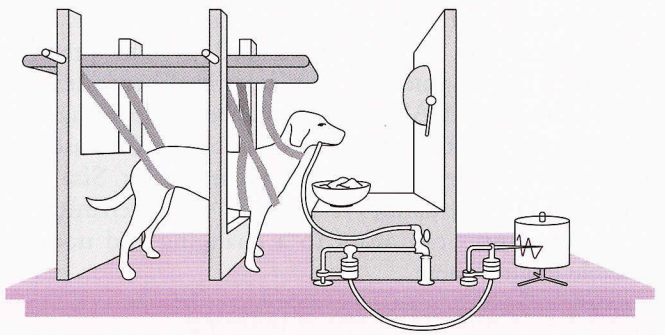


Figure 11.2 The apparatus used by Pavlov in his experiments on conditioned reflexes

Pavlov (1927) noticed that the dogs would often start salivating *before* they were given any food: when they looked at the food or saw the feeding bucket, or even when they heard the footsteps of the laboratory assistant who was coming to feed them. These observations led to the study of what's now called classical (or Pavlovian) conditioning: a stimulus (such as a bell), which wouldn't normally produce a particular response (such as salivation), eventually comes to do so by being paired with another stimulus (such as food) which *does* normally produce the response.

- *Before* conditioning, the taste of food will naturally and automatically make the dog salivate, but the sound of a bell won't. So, the food is referred to as an *unconditioned stimulus* (UCS), and the salivation is an *unconditioned*

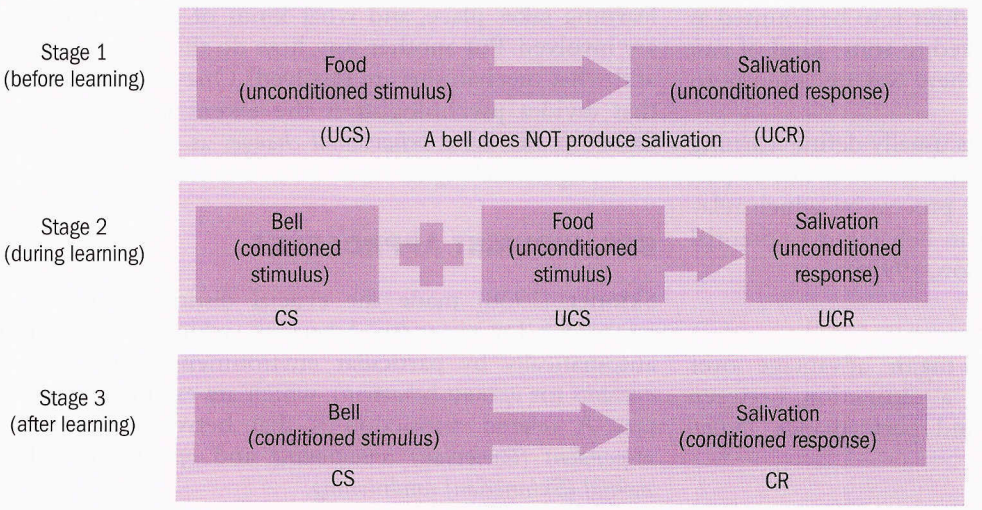


Figure 11.3 The basic procedure involved in classical conditioning

response (UCR): an automatic, reflex, biologically built-in response. The dog doesn't have to learn to salivate in response to food, because it does so naturally.

- *During* conditioning, the bell is paired with the food. Because the bell doesn't naturally produce salivation, it's called a *conditioned stimulus* (CS): it only produces salivation *on the condition* that it's paired with the UCS. It's also *neutral* with regard to salivation prior to conditioning.
- If the bell and food are paired often enough, the dog starts to salivate as soon as it hears the bell and *before* the food is presented. When this occurs, conditioning has taken place. The salivation is now referred to as a *conditioned response* (CR), because it's produced by a conditioned stimulus (CS) – the bell.

This basic procedure can be used with a variety of conditioned stimuli, such as buzzers, metronomes, lights, geometric figures, and so on. The exact relationship between the CS and the UCS can also be varied to give different kinds of conditioning. What I've described above involves *delayed/forward* conditioning (see Table 11.1).

ASK YOURSELF...

- In the basic procedure described above, the CS is presented about a half-second before the UCS. What do you think might happen if the CS is presented *after* the UCS?

Higher-order conditioning

Pavlov demonstrated that a strong CS could be used instead of food, to produce salivation in response to a new stimulus that had never been paired with food. For example, a buzzer (previously paired with food) is paired with a black square. After ten pairings (using delayed conditioning), the dog will salivate a small but significant amount at the sight of the black square before the buzzer is sounded. Remember, the black square has never been associated with food directly, but only indirectly, through association with the buzzer. It's as if the CS were functioning as a UCS.

The buzzer and food combination is referred to as *first-order conditioning*, and the black square and buzzer pairing as *second-order conditioning*. Pavlov found with dogs that learning couldn't go beyond third- or fourth-order conditioning. Even so, conditioning is beginning to look a rather more complex process.

Generalisation and discrimination

In *generalisation*, the CR transfers spontaneously to stimuli similar to, but different from, the original CS. For example, if a dog is trained using a bell of a particular pitch and is then presented with a bell a little higher or lower in pitch, it will still salivate, although only one bell (the original CS) was actually paired with food. However, if the dog is presented with bells that are increasingly different from the original, the CR will gradually weaken and eventually stop altogether – the dog is showing *discrimination*.

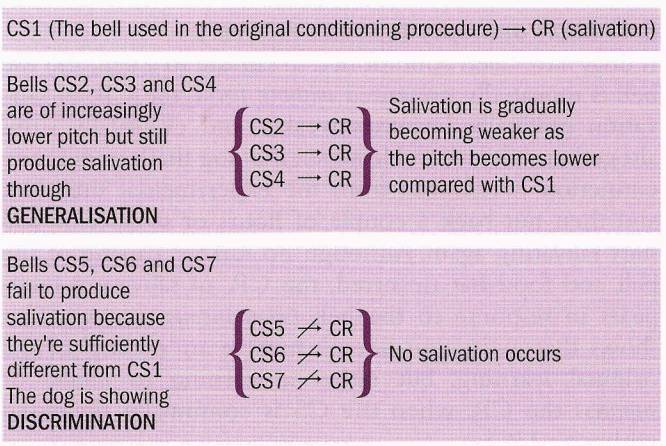


Figure 11.4 An example of discrimination occurring spontaneously as a result of generalisation stopping

Table 11.1 Four types of classical conditioning based on different CS–UCS relationships

1 Delayed or forward	The CS is presented *before* the UCS, and remains 'on' while the UCS is presented and until the UCR appears. Conditioning has occurred when the CR appears before the UCS is presented. A half-second interval produces the strongest learning. As the interval increases, learning becomes poorer. This type of conditioning is typically used in the laboratory, especially with non-humans.
2 Backward	The CS is presented *after* the UCS. Generally this produces very little, if any, learning in laboratory animals. However, much advertising uses backward conditioning (e.g. the idyllic tropical scene is set, and then the coconut bar is introduced).
3 Simultaneous	The CS and UCS are presented *together*. Conditioning has occurred when the CS on its own produces the CR. This type of conditioning often occurs in real-life situations (e.g. the sound of the dentist's drill accompanies the contact of the drill with your tooth).
4 Trace	The CS is *presented and removed* before the UCS is presented, so that only a 'memory trace' of the CS remains to be conditioned. The CR is usually weaker than in delayed or simultaneous conditioning.

Pavlov also trained dogs to discriminate in the original conditioning procedure. For example, if a high-pitched bell is paired with food but a low-pitched bell isn't, the dog will start salivating in response to the former, but not the latter (*discrimination training*). An interesting phenomenon related to discrimination is what Pavlov called *experimental neurosis*.

Box 11.1 Experimental neurosis: how to drive a dog mad

- Pavlov (1927) trained dogs to salivate to a circle but not to an ellipse, and then gradually changed the shape of the ellipse until it became almost circular.
- As this happened, the dogs started behaving in 'neurotic' ways – whining, trembling, urinating and defecating, refusing to eat, and so on.
- It was as if they didn't know how to respond: was the stimulus a circle (in which case, through generalisation, they 'ought' to salivate) or was it an ellipse (in which case, through discrimination, they 'ought not to' salivate)?

Extinction and spontaneous recovery

If dogs have been conditioned to salivate to a bell, and the bell is repeatedly presented *without* food, the CR of salivation gradually becomes weaker and eventually stops altogether *(extinction)*. However, if a dog that's undergone extinction is removed from the experimental situation, and then put back a couple of hours or so later, it will start salivating again. Although no further pairing of the bell and food has occurred, the CR of salivation reappears in response to the bell *(spontaneous recovery)*. This shows that extinction doesn't involve an 'erasing' of the original learning, but rather a learning to *inhibit* or *suppress* the CR when the CS is continually presented without a UCS.

Classical conditioning and human behaviour

There have been many laboratory demonstrations involving human participants. It's relatively easy to classically condition and extinguish CRs, such as the eye-blink and galvanic skin response (GSR). But what relevance does this have for understanding human learning and memory, let alone thinking, reasoning or problem-solving (see Chapter 20)?

In normal adults, the conditioning process can apparently be overridden by instructions: simply *telling* participants that the UCS won't occur causes *instant* loss of the CR, which would otherwise extinguish only slowly (Davey, 1983). Most participants in a conditioning experiment are aware of the experimenter's *contingencies* (the relationship between stimuli and responses), and in the absence of such awareness often fail to show evidence of conditioning (Brewer, 1974).

There are also important differences between very young children, or those with severe learning difficulties, and older children and adults, regarding their behaviour in a variety of *operant* conditioning and discrimination learning experiments. These seem largely attributable to language development (Dugdale & Lowe, 1990: see Chapter 19).

All this suggests that people have rather more efficient, language- or rule-based forms of learning at their disposal than the laborious formation of associations between a CS and UCS. Even behaviour therapy, one of the apparently more successful applications of conditioning principles to human behaviour, has given way to *cognitive-behaviour therapy* (Mackintosh, 1995: see Chapter 45).

Classical conditioning and phobias

Watson was the first psychologist to apply the principles of classical conditioning to human behaviour. He did this in what's considered to be one of the most ethically dubious psychology experiments ever conducted.

KEY STUDY 11.1 The case of Little Albert (Watson & Rayner, 1920)

- Albert B's mother was a wet-nurse in a children's hospital. Albert was described as 'healthy from birth', and 'on the whole stolid and unemotional'.
- When he was about nine months old, his reactions to various stimuli were tested – a white rat, a rabbit, a dog, a monkey, masks with and without hair, cotton wool, burning newspapers and a hammer striking a four-foot steel bar just behind his head. Only the last of these frightened him, so this was designated the UCS (and fear the UCR). The other stimuli were neutral, because they *didn't* produce fear.
- When Albert was just over 11 months old, the rat and the UCS were presented together: as Albert reached out to stroke the animal, Watson crept up behind the baby and brought the hammer crashing down on the steel bar.
- This occurred seven times in total over the next seven weeks. By this time, the rat (the CS) *on its own* frightened Albert, and the fear was now a CR. Watson and Rayner had succeeded in deliberately producing in a baby a phobia of rats.



A very rare photograph of John Watson and Rosalie Rayner during the conditioning of Little Albert

- The CR transferred spontaneously to the rabbit, the dog, a sealskin fur coat, cotton wool, Watson's hair and a Santa Claus mask. But it didn't generalise to Albert's building blocks, or to the hair of two observers (so Albert was showing discrimination).
- Five days after conditioning, the CR produced by the rat persisted. After ten days it was 'much less marked', but was still evident a month later.

ASK YOURSELF...

- Why do you think Watson and Rayner's experiment is considered to be so ethically unsound?

It's unclear whether Watson and Rayner intended to remove Albert's phobia. What is certain is that his mother removed him from the hospital before this could happen. They might have attempted to remove it through the method of *direct unconditioning*, as used by Jones (1924). This is an early example of what Wolpe (1958) called *systematic desensitisation* (see Chapter 45).

KEY STUDY 11.2 The case of Little Peter (Jones, 1924)

- Peter was a two-year-old living in a charitable institution. Jones was mainly interested in those children who cried and trembled when shown an animal (such as a frog, rat or rabbit). Peter showed an extreme fear of rats, rabbits, feathers, cotton wool, fur coats, frogs and fish, although in other respects he was regarded as well adjusted. It wasn't known how these phobias had arisen.
- Jones, supervised by Watson, put a rabbit in a wire cage in front of Peter while he ate his lunch. After 40 such sessions, Peter ate his lunch with one hand and stroked the rabbit (now on his lap) with the other.
- In a series of 17 steps, the rabbit (still in the cage) had been brought a little closer each day, then let free in the room, eventually sitting on Peter's lunch tray.

Behaviour therapists, such as Eysenck, regard the Little Albert experiment as demonstrating how *all* phobias are acquired in everyday life.

ASK YOURSELF...

- How could the basic classical conditioning procedure help to explain someone's fear of the dentist?

A fear of the dentist could be learnt in the following way:

- drill hitting a nerve (UCS) ⟶ pain/fear (UCR)
- sound of drill (CS) + drill hitting nerve (UCS) ⟶ pain/fear (UCR)
- sound of the drill (CS) ⟶ fear (CR).



If you're looking at the dentist peering into your mouth, you may become afraid of upside-down faces. If the dentist is wearing a mask, you may acquire a fear of masks too. Also, through generalisation, you can come to fear all drill-like noises or white coats worn by medical personnel or lab technicians.

Human phobias may be perpetuated through *avoiding* the object of our fears. In other words, we don't give the fear a chance to undergo extinction (see Chapters 44 and 45). This occurs in conjunction with *operant conditioning*, whereby the avoidance behaviour becomes strengthened through negative reinforcement.

Operant conditioning: why do rats press levers?

When Skinner drew the distinction between respondent and operant behaviour, he wasn't rejecting the discoveries of Pavlov and Watson. Rather, he was arguing that most animal and human behaviour isn't triggered or elicited by specific stimuli. He was interested in how animals *operate on their environment*, and how this operant behaviour is *instrumental* in bringing about certain consequences, which then determine the probability of that behaviour being repeated. Skinner saw the learner as much more *active* than did Pavlov or Watson (see Box 11.4, page 180).

Just as Watson's ideas were based on the earlier work of Pavlov, so Skinner's study of operant conditioning grew out of the earlier work of another American, Edward Thorndike.

Thorndike's law of effect

Thorndike (1898) built puzzle-boxes for use with cats, whose task was to operate a latch that would automatically cause the door to spring open, freeing them. Each time they managed to escape from the puzzle-box, there was a piece of fish, visible from inside the puzzle-box, waiting for them. The cats were deprived of food for a considerable time before the experiments began, and so

were highly motivated. After eating the fish, the cats were put straight back in, and the whole process was repeated.

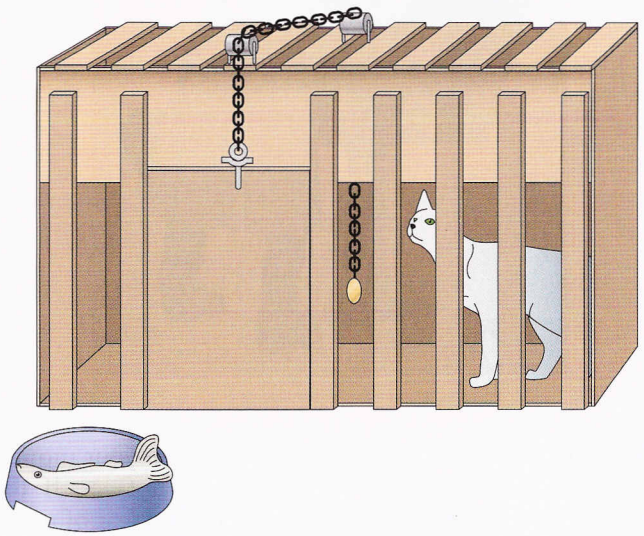


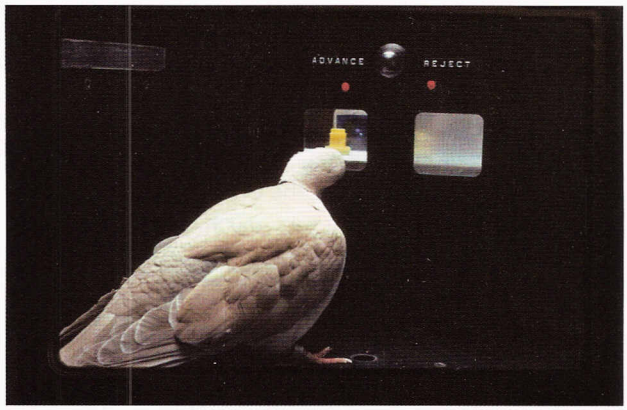
Figure 11.5 Thorndike's puzzle-box

At first the cats struggled to get out, behaving in a purely random way, and it was only by chance that the first escape was made. But each time they were returned to the puzzle-box, it took them less time to operate the latch and escape. For instance, with one of the boxes, the average time for the first escape was five minutes, but after 10–20 trials this was reduced to about five seconds.

Thorndike accounted for this by claiming that the learning was essentially random or *trial and error*. There was no sudden flash of insight into how the releasing mechanism worked, but rather a gradual reduction in the number of errors made and hence escape time (see Chapter 20). What was being learned was a connection between the stimulus (the manipulative components of the box) and the response (the behaviour that allowed the cat to escape). Further, the stimulus–response connection is 'stamped in when pleasure results from the act, and stamped out when it doesn't' *(law of effect)*. This is crucially important as a way of distinguishing classical and operant conditioning, which Skinner did 40 years later.

Skinner's 'analysis of behaviour'

Skinner used a form of puzzle-box known as a *Skinner box*. This was designed for a rat or pigeon to do things in, rather than escape from. The box has a lever (in the case of rats) or illuminated discs (in the case of pigeons), under which is a food tray. The experimenter decides exactly what the relationship shall be between pressing the lever and the delivery of a food pellet, providing total *control* of



Pigeon in a Skinner box (or 'operant chamber')

the animal's environment. But it's the animal that has to do the work.

Skinner used the term *strengthen* in place of Thorndike's 'stamping in', and *weaken* in place of 'stamping out'. He regarded Thorndike's terms as too mentalistic, and his own as more objective and descriptive.

Box 11.2 Skinner's analysis of behaviour (or the ABC of operant conditioning)

The *analysis of behaviour* requires an accurate but neutral representation of the relationship (or *contingencies*) between:

- ***A**ntecedents* (the stimulus conditions, such as the lever, the click of the food dispenser, a light that may go on when the lever is pressed)
- ***B**ehaviours* (or *operants*, such as pressing the lever)
- ***C**onsequences* (what happens as a result of the operant behaviour – reinforcement or punishment).

This is the ABC of operant conditioning.

According to Skinner's version of the law of effect, 'behaviour is shaped and maintained by its consequences'. The consequences of operants can be *positive reinforcement, negative reinforcement* or *punishment*.

While both positive and negative reinforcement *strengthen* behaviour (making it more probable), each works in a different way. *Positive reinforcement* involves presenting something pleasurable (such as food), while *negative reinforcement* involves the removal or avoidance of some 'aversive' (literally 'painful') state of affairs (such as electric shock). Punishment *weakens* behaviour (making it less probable), through the presentation of an aversive stimulus.

Reinforcers and reinforcement

Food itself is a reinforcer, electric shock a punisher. But the *process* whereby food is presented as a result of, say, lever-pressing is (positive) reinforcement, and when electric shock is presented instead it's called punishment.

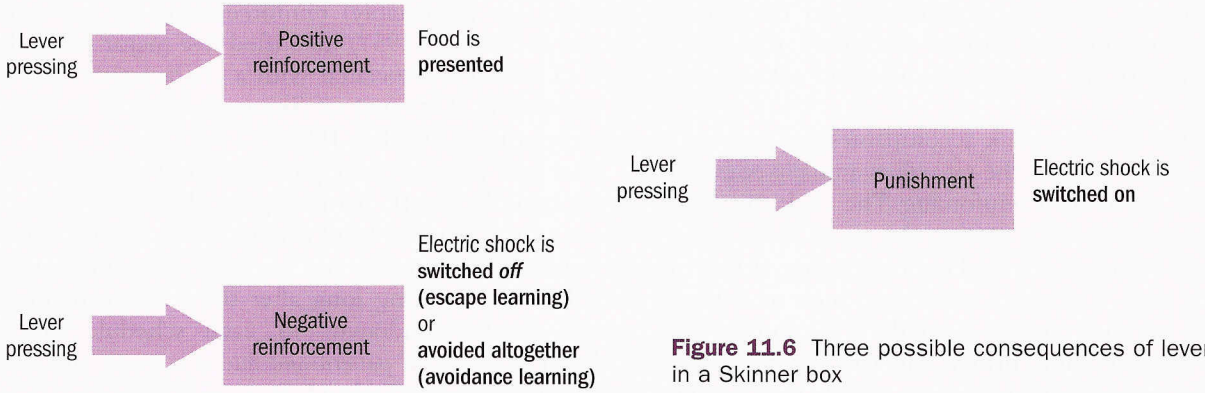


Figure 11.6 Three possible consequences of lever pressing in a Skinner box

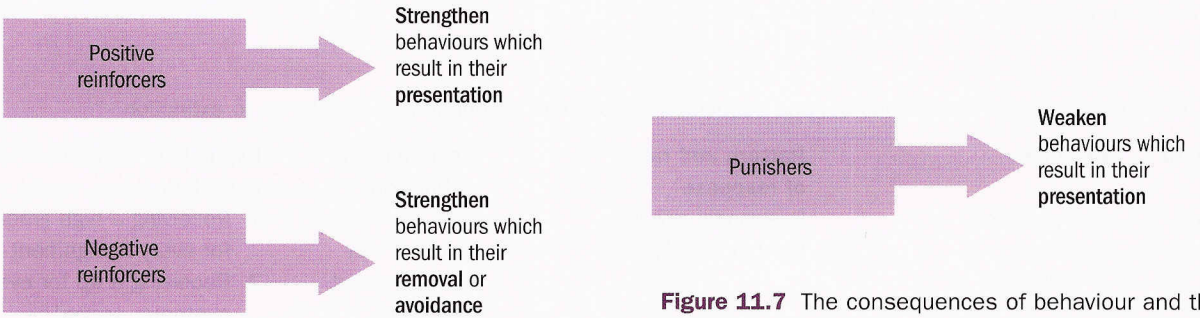


Figure 11.7 The consequences of behaviour and their effects

Skinner argues that the decision as to whether something is a reinforcer or a punisher can only be made *after* it's been made contingent on a specific behaviour on a number of occasions. So, if the behaviour is strengthened when followed by food, the food is a reinforcer, and if the shock weakens it, the shock is a punisher. Reinforcers and punishers cannot be defined *independently* of the effects they have on behaviour.

ASK YOURSELF...
- Do you consider this to be a valid way of defining reinforcers and punishers?
- Is it 'objective'?

Skinner's definition could be accused of circularity ('a reinforcer is whatever strengthens behaviour' and 'whatever strengthens behaviour is a reinforcer'). In practice, animals are starved for several hours before the experiments begin, to ensure they'll be motivated and find food reinforcing.

Skinner argues that his approach is *more* scientific, since the *intended* effect may not always coincide with the *actual* effect. For example, if a child who feels deprived of its parents' attention is smacked and shouted at when naughty, it's *more likely* to carry on being naughty. For a child who feels ignored, *any* attention is better than no attention at all. So, what is 'punishment' as far as the parents are concerned may be a positive reinforcement for the child. Similarly, a positive reinforcement can only loosely be called a reward, since 'reward' implies that the rewarder *expects* to strengthen some behaviour, whereas 'positive reinforcement' refers to what has been *shown* to strengthen it.

Primary and secondary reinforcers

Primary reinforcers (such as food, water, sex) are *natural* reinforcers (reinforcing in themselves). *Secondary reinforcers* acquire their reinforcing properties through association with primary reinforcers – that is, we have



Operant conditioning is the basis of most forms of dog (and other animal) training

to *learn* (through classical conditioning) to find them reinforcing. Examples of human secondary (or *conditioned*) reinforcers are money, cheques and tokens (see Chapter 45).

In a Skinner box, if a click accompanies the presentation of each pellet of food, the rat will eventually come to find the click on its own reinforcing. The click can then be used as a reinforcer for getting the rat to learn some new response. (Clickers are used in dog training, at first in conjunction with a primary reinforcer, such as a food 'treat', then on their own.) Secondary reinforcers are important, because they 'bridge the gap' between the response and the primary reinforcer, which may not be presented immediately.

Schedules of reinforcement

Another important aspect of Skinner's work is concerned with the effects on behaviour of how frequently and how regularly (or predictably) reinforcements are presented. Ferster & Skinner (1957) identified five major schedules, each of which is associated with a characteristic pattern of responding. This part of Skinner's research is largely counterintuitive (Walker, 1984).

Rats and pigeons (and probably most mammals and birds) typically 'work harder' (press the lever/peck the disc at a faster rate) for scant reward: when reinforcements are relatively infrequent and irregular or unpredictable, they'll go on working long after the reinforcement has actually been withdrawn. So, each schedule can be analysed in terms of *pattern and rate of response* and *resistance to extinction* (see Table 11.2).

The rate of response can be represented by plotting responses cumulatively as steps along a vertical axis, against the time when they're made along the horizontal axis. Skinner called this a '*cumulative record*'.

Table 11.2 Common reinforcement schedules, and associated patterns of response and resistance to extinction

Reinforcement schedule	Example	Pattern and rate of response	Resistance to extinction	Example of human behaviour
Continuous reinforcement (CRF)	Every single response is reinforced	Response rate is low but steady	Very low – the quickest way to bring about extinction	1 Receiving a high grade for every assignment 2 Receiving a tip for every customer served
Fixed interval (FI)	A reinforcement is given every 30 seconds (FI 30), provided the response occurs at least once during that time	Response rate speeds up as the next reinforcement becomes available; a pause after each reinforcement. Overall response rate fairly low	Fairly low – extinction occurs quite quickly	1 Being paid regularly (every week or month) 2 Giving yourself a 15-minute break for every hour's studying done
Variable interval (VI)	A reinforcement is given on average every 30 seconds (VI 30), but the interval varies from trial to trial. So, the interval on any one occasion is unpredictable	Response rate is very stable over long periods of time. Still some tendency to increase response rate as time elapses since the last reinforcement	Very high – extinction occurs very slowly and gradually	Many self-employed people receive payment irregularly (depending on when the customer pays for the product or service)
Fixed ratio (FR)	A reinforcement is given for a fixed number of responses, however long this may take, e.g. one reinforcement every ten responses (FR 10)	There's a pronounced pause after each reinforcement, and then a very high rate of responding leading up to the next reinforcement	As in FI	1 Piece work (the more work done, the more money earned 2 Commission (extra money for so many goods made or sales completed)
Variable ratio (VR)	A reinforcement is given on average every ten responses (VR 10), but the number varies from trial to trial. So, the number of responses required on any one occasion is unpredictable	Very high response rate – and very steady	Very high – the most resistant of all the schedules	Gambling

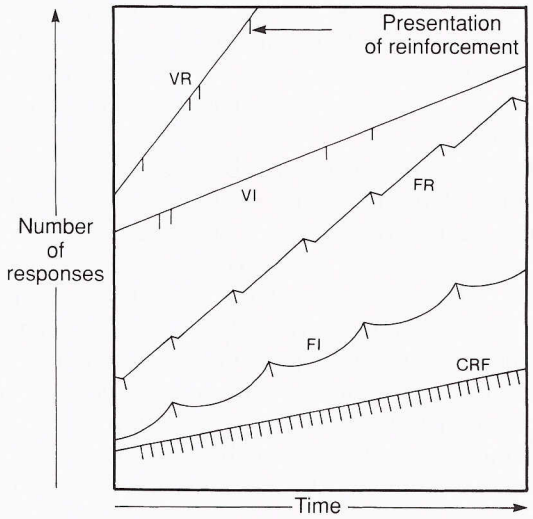


Figure 11.8 Typical cumulative records for a response (such as lever pressing) reinforced using five schedules of reinforcement

A *continuous* schedule is usually used only when some new response is being learned. Once it's being emitted regularly and reliably, it can be maintained by using one of the four *partial* or *intermittent* schedules. But this change must be gradual. If the animal is switched from a continuous schedule to, say, a VR 50, it will soon stop responding. Skinner (1938) originally used an interval schedule because a reinforcer is guaranteed, sooner or later, so long as one response is made during the interval.

Shaping: the reinforcement of successive approximations

Reinforcement can be used to build up relatively complex behaviour (not part of the animal's natural repertoire) by reinforcing closer and closer approximations to the desired behaviour *(shaping)*. First, the behaviour must be broken down into a number of small steps, each of which is reinforced in sequence. Gradually, what the animal can do is much more like what the experimenter is trying to teach it. This is what animal trainers have been doing for hundreds of years, and is the method of reinforcement Skinner used to teach pigeons to play ping-pong or turn a full (anticlockwise) circle. Most human skills are learned in this step-by-step manner.

Shaping also provides an important foundation for *behaviour modification*. This is used to teach children and adults with learning difficulties to use the toilet, feed and dress themselves, and other social skills. It's also been used to develop speech in autistic children and adult schizophrenics (see Chapter 45).

Negative reinforcement: escape and avoidance learning

Escape and avoidance learning are the two major ways in which negative reinforcement has been studied in the laboratory. *Escape learning* is relatively simple. For example, rats can learn to press a lever to turn off electric shock. *Avoidance learning* is more complex and more relevant to certain aspects of human behaviour.

Box 11.3 Avoidance learning through negative reinforcement

- Most laboratory studies use a *shuttle box*, a box divided into two compartments, sometimes with a barrier or door between them.
- Electric shocks can be delivered through the floor of either compartment independently of the other. Neither side is permanently safe, but only one is electrified at a time.
- The animal's task is to find which is the safe side on any one occasion. A *warning signal* (a light or buzzer) is given whenever the electrified side is to be changed, so the animal can always avoid being shocked if it switches sides when it hears (or sees) the signal.

According to the *two factor theory* (Mowrer, 1960) or the two process theory (Gray, 1975):

- the animal first learns to be afraid (the warning signal elicits an anticipatory emotional response of fear/anxiety through *classical conditioning*)
- it then learns a response to reduce the fear (jumping the barrier is *negatively reinforced* through avoiding the shock before it's switched on).

Miller (1948) trained rats to run out of a white room, through a small door, into a black room by giving them shocks in the white room. After pre-training, the door was closed and could only be opened by the rat turning a wheel. Even though no further shocks were given, the residual 'aversiveness' of the white room (acquired through classical conditioning) was sufficient to motivate the rats to learn quickly to turn the wheel. This allowed them to run through into the 'safe' room, thus relieving their anxiety (negative reinforcement).

This illustrates an important difference between positive and negative reinforcement in relation to extinction. If we try to teach a rat a new response in order to get it into a black box that used to contain food, it will soon stop responding (it soon 'discovers' that the food is no longer available). But if a rat successfully escapes from a white room that used to be dangerous, it may go on escaping indefinitely (it doesn't stay around long enough to 'discover' that the shock is no longer happening).

So, responses motivated by conditioned fear/anxiety should take longer to extinguish than those motivated by positive incentives. Avoidance learning prevents the learner from testing reality, and this has been found in dogs and humans (Solomon & Wynne, 1953; Turner & Solomon, 1962). This can explain both the persistence of human phobias and the use of methods to remove them based on the principle of *forced reality testing* (see Chapter 45).

Punishment

Skinner maintained that, with both humans and non-humans, positive (and, to a lesser extent, negative) reinforcement is a much more potent influence on behaviour than punishment. This is largely because punishment can only make certain responses less likely: you cannot teach anything *new* by punishment alone.

However, Campbell & Church (1969) argue that punishments are, if anything, a *stronger* influence on behaviour than the incentive effects of reinforcements (at least as far as laboratory animals are concerned). But punishment produces unpleasant side-effects, such as stress, anxiety, withdrawal and aggression.

Estes (1970) concluded that punishment merely *suppresses* lever pressing in the short term, but doesn't weaken it. Other experiments have shown that the strength and duration of the suppression effect depend on the intensity of the punishment and the degree of deprivation. However, the response is still suppressed rather than unlearned.

When alternative ways of obtaining reinforcers are available, punishment has a more powerful suppressive effect on the punished behaviour (Howe, 1980). For example, Azrin & Holz (1966) combined punishment and reinforcement, so that response A was punished while response B (incompatible with A) was positively reinforced. Skinner advocates this with human beings.

The antecedents of behaviour: stimulus control

In operant conditioning, the stimulus indicates the likely consequence of emitting a particular response: the operant behaviour is *more likely* to occur in the presence of some stimuli than others. If a rat has been reinforced for pressing the lever, it's more likely to go on emitting that response as the lever becomes associated both with reinforcement and the action of pressing (probably through classical conditioning). Technically, lever pressing has now come under the *stimulus control* of the lever. But there's still no inevitability about pressing it, only an *increased probability*. (This is why the term S–R psychology is sometimes used only to refer to classical conditioning.)

Similarly, drivers' behaviour is brought under the stimulus control of traffic signals, road signs, other vehicles, pedestrians, and so on. Much of our everyday behaviour can be seen in this way. Sitting on chairs, answering the telephone, turning on the television, and so on, are all operants that are more likely to occur in the presence of those stimuli because of the past consequences of doing so.

A special case of stimulus control is a *discriminative stimulus*. If a rat in the Skinner box is reinforced for lever pressing only when a light is on, the light soon becomes a discriminative stimulus (the rat presses only when the light is on).



A driver's behaviour (stopping the car) under the stimulus control of the (red) traffic light

ASK YOURSELF...

- What are the major similarities and differences between classical and operant conditioning?

Box 11.4 Major similarities and differences between classical and operant conditioning

Similarities

- They are both types of *associative learning*.
- *Generalisation*, *discrimination*, *extinction* and *spontaneous recovery* occur in both.

Differences

- In *classical* conditioning, the UCR or CR is *elicited* (triggered automatically) by the UCS or CS (it's essentially a reflex, involuntary response). In *operant* conditioning, behaviour is *emitted* by the organism and is essentially voluntary.
- In *classical* conditioning, the stimulus is guaranteed to produce the response, while the likelihood of a particular *operant* response being emitted is a function of the past consequences of such behaviour (it's more or less *probable*, but never certain).
- In *classical* conditioning, the UCS works in basically the same way *regardless* of whether it's pleasurable (such as food) or aversive (such as electric shock). In *operant* conditioning, responses that result in pleasurable outcomes are likely to be repeated, while those that result in aversive outcomes aren't.
- In *classical* conditioning, completely new stimulus–response connections are formed, while *operant* conditioning involves the strengthening or weakening of response tendencies already present in the animal's behavioural repertoire.
- In *classical* conditioning, the reinforcer (UCS) is presented *regardless* of what the animal does, and is presented *before* the response. In *operant* conditioning, the reinforcer is only presented if the animal emits some

specified, pre-selected behaviour, and is presented *after* the behaviour.
- In *classical* conditioning, the *strength* of conditioning is typically measured in terms of *response magnitude* (e.g. how many drops of saliva) and/or *latency* (how quickly a response is produced by a stimulus). In *operant* conditioning, strength is measured mainly as *response rate* (see Table 11.2).

Does conditioning work in the same way for all species?

The fact that many experiments involving a variety of species can all be described as classical conditioning *doesn't* in itself mean that there's only one mechanism involved, or only one explanation that applies, equally, to all species and all cases (Walker, 1984). Although *conditionability* seems to be an almost universal property of nervous systems (including those of sea snails, flatworms and fruit flies), many psychologists have argued that there can be no general laws of learning (Seligman, 1970).

If such laws do exist, one of them is likely to be the *law of contiguity*: events (or stimuli) that occur close together in time and space are likely to become associated with each other. Most of the examples of conditioning we've considered so far would appear to 'obey' the law of contiguity.

KEY STUDY 11.3 Learning to feel as sick as a rat (Garcia & Koelling, 1966; Garcia *et al.*, 1966)
- These represent an important exception to the 'law' of contiguity.
- In Garcia *et al.*'s study, rats were given a novel-tasting solution, such as saccharine-flavoured water (the CS), prior to a drug, *apomorphine* (the UCS), which has a *delayed* action, inducing severe intestinal illness (the UCR).
- In two separate experiments, the precise time lapse between tasting the solution and onset of the drug-induced nausea was either (a) 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21 and 22 minutes, or (b) 30, 45, 75, 120 and 180 minutes.
- In (a), the rats received just four treatments (one every third day). In all cases, there was a conditioned aversive response to the solution: intestinal illness became a CR (a response to the solution alone). In some replications, just a single treatment has been required.

While rats can also be conditioned to novel smells, auditory, visual and tactile stimuli aren't so readily associated with internal illness. As for pigeons, it's impossible to deter them from water and, for other species, taste aversions are very difficult to establish, even if the animal is made very ill. In almost all species, aversions are learned more easily to new flavours than to familiar ones (saccharine solution is a novel taste for the rat).

Biological constraints on conditioning

It seems, then, that there are definite biological limitations on the ability of animals to develop a conditioned aversion. Similarly, rats typically learn very quickly to avoid shock in a shuttle box and to press a lever for food. However, they don't learn very readily to press a lever to avoid shock. Pigeons can be trained quickly to fly from one perch to another in order to avoid shock, but it's almost impossible to train them to peck a disc to avoid shock.

Findings like these have led Bolles (1980) and others to conclude that we cannot regard the basic principles of learning as applying equally to all species in all situations. We must take into account the *evolutionary history* of the species, as well as the individual organism's learning history. An important idea in this context is Seligman's concept of *preparedness* (1970). Animals are biologically prepared to learn actions that are closely related to the survival of their species (such as learned water or food aversions), and these *prepared* behaviours are learned with very little training. Equally, *contraprepared* behaviours are contrary to an animal's natural tendencies, and so are learned with great difficulty, if at all. Seligman believes that most of the behaviour studied in the laboratory falls somewhere in between these two extremes.

As far as human behaviour is concerned, much of the relevant data relates to how easily certain conditioned fear responses can be induced in the laboratory or how common certain naturally occurring phobias are compared with others. For example, Ohman *et al.* (1975a, 1975b) paired slides of snakes and spiders with a strong electric shock, and quickly established conditioned emotional responses to these slides – but *not* to slides of flowers, houses or berries.

Seligman (1972) observed that human phobias tend to fall into certain narrow categories, mostly animals or dangerous places. Most common of all were the fear of snakes, spiders, the dark, high places and closed-in places, and often there's no previous evidence for the fear actually having been conditioned (see Chapters 43 and 45). Also, classically conditioned responses extinguish faster in humans than animals. This is because the CRs are modulated by more complex human memories (Weiskrantz, 1982).

The role of cognition in conditioning

According to Mackintosh (1978), conditioning cannot be reduced to the strengthening of S–R associations by the automatic action of a process called reinforcement. It's more appropriate to think of it as a matter of detecting and learning about *relations between events*. Animals typically discover what signals or causes events that are important to them, such as food, water, danger or safety. Salivation or lever pressing are simply a convenient index of what the subject has learned, namely that certain relationships exist in its environment.

Classical conditioning

Pavlov himself described the CS as a 'signal' for the UCS, the relationship between CS and the UCS as one of 'stimulus substitution', and the CR as an 'anticipatory' response (or 'psychic secretions'), suggesting that his dogs were *expecting* the food to follow the bell. Consistent with this interpretation, Rescorla (1968) presented two groups of animals with the same number of CS–UCS pairings, but the second group also received additional presentations of the UCS on its own without the CS. The first group showed much stronger conditioning than the second, indicating that the most important factor (at least in classical conditioning) is how *predictably* the UCS follows the CS, *not* how often the CS and UCS are paired.

Blocking also supports a more cognitive interpretation (Kamin, 1969). For example, if an animal is shown a light, quickly followed by an electric shock, the light soon comes to elicit fear as a CR. If a noise is then added (noise + light + shock), then the noise should also soon become a CS, because it, too, is being paired with shock. However, this *isn't* what happens. If the noise is later presented alone, it fails to produce a CR. It seems that the noise has somehow been 'blocked' from becoming a CS because of the previous conditioning to the light. In cognitive terms, since the light already predicts shock, the noise is *irrelevant*. It provides no additional information – the animal already 'knows' that shock will follow the light.

Operant conditioning

KEY STUDY 11.4 Learned helplessness (Seligman, 1974, 1975)

- Dogs were strapped into a harness and given a series of shocks from which they couldn't escape.
- They were later required to jump a barrier in a shuttle box within 10 seconds of a warning signal, or suffer 50 seconds of painful shock.
- Control dogs (which hadn't been subjected to the inescapable shocks) learned the avoidance response very quickly.
- But about two-thirds of the experimental dogs seemed unable to do so. They seemed passively resigned to suffering the shock, and even if they did successfully avoid the shock on one trial, they were unlikely to do so on the next. Some dogs had to be pushed over the barrier 200 times or more before this learned helplessness wore off.

According to Seligman, the dogs learned that no behaviour on their part had any effect on the occurrence (or non-occurrence) of a particular event (the shock). This has been demonstrated using human participants by Miller & Norman (1979), and Maier & Seligman (1976) have tried to explain depression in humans in terms of learned helplessness (see Chapters 12 and 44).

Skinner's claim that reinforcements and punishments *automatically* strengthen and weaken behaviour has been challenged by Bandura (1977a). For Bandura:

> Reinforcements serve principally as an informative and motivational operation rather than as a mechanical response strengthener.

Reinforcement provides the learner with *information* about the likely consequences of certain behaviour under certain conditions – that is, it improves our prediction of whether a given action will lead to pleasant (reinforcement) or unpleasant (punishment) outcomes in the *future*. It also *motivates* us, by causing us to anticipate future outcomes. Our present behaviours are largely governed by the outcomes we *expect* them to have, and we're more likely to learn behaviour if we value its consequences.

This cognitive reinterpretation of reinforcement forms part of Bandura's *social learning theory* (SLT), which is discussed in more detail in relation to aggression (Chapter 29), moral and gender development (Chapters 35 and 36), and personality (Chapter 42). While not denying the role of both classical and operant conditioning, SLT focuses on *observational learning* (or *modelling*), in which cognitive factors are crucial. This is reflected in Bandura's renaming (1986, 1989) of SLT as *social cognitive theory*.

COGNITIVE APPROACHES

Tolman's cognitive behaviourism

Although he was working within the behaviourist tradition in the 1920s, 1930s and 1940s, Tolman would today be regarded as a cognitive psychologist. He explained the learning of rats in terms of inferred cognitive processes, in particular *cognitive* or *mental maps*.

KEY STUDY 11.5 Latent learning – who needs reinforcement? (Tolman & Honzik, 1930)

- *Group 1* rats were reinforced every time they found their way through a maze to the food box.
- *Group 2* rats were never reinforced.
- Group 3 rats received no reinforcement for the first 10 days of the experiment, but did so from day 11.
- Not surprisingly, Group 1 learned the maze quickly and made fewer and fewer mistakes, while Group 2 never reduced the time it took to find the food, and moved around aimlessly much of the time.
- Group 3 made no apparent progress during the first 10 days. But they then showed a sudden decrease in the time it took to reach the goal box on day 11, when they received their first reinforcement. They caught up almost immediately with Group 1.

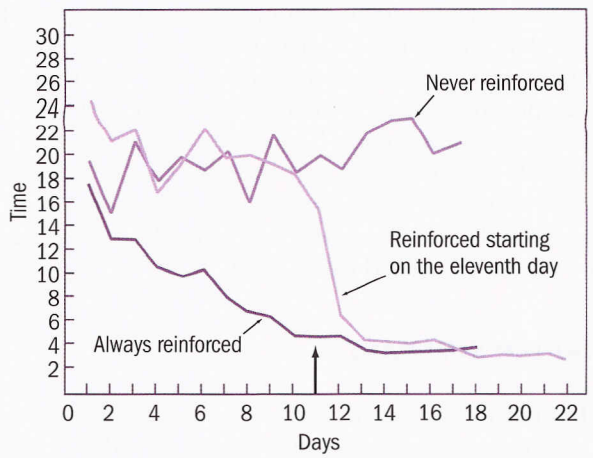


Figure 11.9 The results of Tolman and Honzik's study of latent learning in rats

ASK YOURSELF...

- How might you explain Tolman and Honzik's results?
- Could the distinction we made earlier between learning and performance help?

Clearly, Group 3 rats had been learning their way through the maze during the first 10 days, but that learning was *latent* (hidden or 'behaviourally silent'). In other words, it didn't show up in their actual behaviour until they received the incentive of the reinforcement on day 11. Tolman and Honzik concluded that reinforcement may be important in relation to *performance* of learned behaviour, but that it *isn't* necessary for the learning itself.

Tolman's (1948) *place learning* (or *sign learning*) theory maintains that rats learn *expectations* as to which part of the maze will be followed by which other part of the maze. Tolman called these expectations *cognitive maps*, a primitive kind of perceptual map of the maze, an understanding of its spatial relationships (much like the mental map you have of familiar streets leading to home or college).

Although a cognitive map can only be *inferred* from actual behaviour, it's difficult to know how else to explain the findings that rats will take short-cuts to the food box if the old path is blocked. Similarly, if the maze were rotated, they could find the usual food location from several different starting points (Tolman *et al.*, 1946). Restle (1957) flooded a maze immediately after a group of rats had learnt to run it, and they were able to swim to the goal box with no more errors than when they'd walked. This clearly supports Tolman's interpretation.

Insight learning

Insight learning represents a view of learning as 'purely cognitive'. It stems from the Gestalt school of psychology, which is diametrically opposed to the S–R approach. The Gestalt psychologists are best known for their work on perception (see Chapter 15), and their view of learning is directly linked to their view of perception.

Table 11.3 Gagné's hierarchy of learning

1 Signal learning	Establishment of a simple connection, in which a stimulus takes on the properties of a signal (classical conditioning)
2 Stimulus–response (S–R) learning	Establishment of a connection between a stimulus and response, where the response is a voluntary movement and the connection is instrumental in satisfying a need/motive (operant conditioning)
1 and 2 are prerequisites for:	
3 Chaining	The connecting of a sequence of two/more previously learned S–R connections
4 Verbal association	The learning of chains that are specifically verbal, important for the acquisition/use of language. Enables several learned connections involving words to be emitted in a single sequence
3 and 4 are prerequisites for:	
5 Discrimination learning	Making different responses to similar stimuli. Involves more than simply making isolated S–R connections, because it's necessary to deal with the problem of interference between similar items
5 is a prerequisite for:	
6 Concept learning	Learning to make a common response to stimuli that form a class/category, but which differ in their physical characteristics. Requires representing information in memory, classifying events, and discriminating between them on the basis of abstract properties
6 is a prerequisite for:	
7 Rule learning	A rule is a chain of two/more concepts (e.g. 'if A then B')
7 is a prerequisite for:	
8 Problem solving	Involves recombining old rules into new ones, making it possible to answer questions and solve problems. Especially important for real-life human problem-solving situations

Insight learning can be defined as a *perceptual restructuring* of the elements that constitute a problem situation: a previously missing 'ingredient' is supplied, and all the parts are seen in relation to each other, forming a meaningful whole. Some of the most famous studies of insight learning were conducted by Köhler, one of the founders of Gestalt psychology, with chimps. These, and other Gestalt studies of problem-solving, are discussed in Chapter 20.

Gagné's hierarchy of learning

Koestler (1970) believes that the debate between the S–R and cognitive theorists derives to a large extent from a refusal to take seriously the notion of *ripeness*. By this, he means a person's or animal's readiness to make a discovery or solve a problem, based on relevant knowledge, skills and past experience. Rats and cats have generally been presented with tasks for which they are biologically ill-fitted, and so the resulting learning was bound to appear gradual, piecemeal and at first quite random. But Köhler set chimps problems for which they were (almost) ripe, which gave the impression that all learning is based on insight.

Gagné (1970) has proposed a way of identifying the relationship between simple and complex forms of learning. Eight major varieties of learning are related *hierarchically*, with simpler abilities constituting *prerequisites* for more complex abilities (see Table 11.3).

Learning sets and transfer of learning

According to Harlow (1949), S–R learning and insight learning are essentially two different phases of the same, continuous process. S–R learning predominates in the early stages, and insight develops out of prior S–R connections. Harlow suggests that the concept of a *learning set* (or *'learning to learn'*) represents an intervening process between S–R and insight learning. The greater the number of sets, the better equipped the learner is to adapt to a changing environment; a very large number of different sets 'may supply the raw material for human thinking'.

A learning set involves learning a general skill applicable to a whole new class of problems, a simple rule or code, based on a conceptual (not a perceptual) relationship. In experiments with monkeys, Harlow demonstrated that insightful learning is itself (at least partially) *learned* and grows out of more random, trial-and-error learning.

CONCLUSIONS: TRANSFER OF LEARNING

A learning set represents a special case of a more general phenomenon known as *transfer of learning* (or *training*). Essentially, transfer refers to the influence of earlier learning on later learning, which is an inherent feature of the learning process in general (Howe, 1980). Some kinds of transfer take the form of simple stimulus generalisation (equivalent to Gagné's signal learning), while in more complex learning situations transfer may depend on the acquisition of rules or principles that apply to a variety of different circumstances (Gagné's concept, rule learning and problem-solving). Learning sets can be viewed as intermediate between simple generalisation, and the more complex transfer phenomena involved in hierarchically organised skills (Howe, 1980).

CHAPTER SUMMARY

- **Learning** has played a major part in the development of psychology as a scientific discipline and is central to the **behaviourist** approach.
- Psychologists are interested in learning **as a process**. Theories of learning differ as to the nature of the process involved, especially the role played by **cognitive** factors.
- It's generally agreed that learning involves a relatively permanent change in behaviour due to past experience. The distinction between **learning** and **performance** refers to **potential** and **actual behaviour** respectively.
- The distinction between **respondent** and **operant** behaviour corresponds to **classical** (**respondent** or **Pavlovian**) and **operant** (**instrumental** or **Skinnerian**) **conditioning** respectively.
- In **classical conditioning**, the pairing of a **conditioned** and an **unconditioned stimulus** results in the former eliciting a response that formerly was produced only by the latter.
- **Delayed/forward**, **backward**, **simultaneous** and **trace** conditioning differ according to the relationships between the conditioned and the unconditioned stimuli.
- **Generalisation**, **discrimination**, **extinction** and **spontaneous recovery** represent conditioning phenomena, which make it more complex and versatile. Spontaneous recovery demonstrates that extinction involves a learning to **inhibit/suppress** the conditioned response.
- Watson applied classical conditioning to human behaviour for the first time by inducing fear of a rat in Little Albert. Jones removed animal phobias from Little Peter using an early form of systematic desensitisation.
- Compared with classical conditioning, **operant conditioning** sees learning as a much more **active** process. Skinner was interested in how animals operate on their environment, and how their activity is instrumental in producing certain consequences.
- Skinner's work was based on Thorndike's **law of effect**. He designed a form of puzzle-box (a **Skinner box**), and called the consequences of behaviour **positive reinforcement**, **negative reinforcement** and **punishment**.

- Reinforcement (both positive and negative) **strengthens** behaviour, while punishment **weakens** it.
- **Primary reinforcers** are **naturally** reinforcing, while **secondary**/conditioned reinforcers come to be reinforcing through association with primary reinforcers.
- Different **schedules of reinforcement** can be analysed in terms of **pattern/rate of response** and **resistance to extinction**. **Variable** schedules involve high, steady rates of response and high resistance to extinction, compared with **fixed** and **continuous** schedules.
- **Shaping** involves the reinforcement of successive approximations to the desired behaviour.
- **Escape** and **avoidance learning** are two forms of negative reinforcement. They've been explained by the **two factor theory**, according to which both classical and operant conditioning are involved. The persistence of human phobias can be understood in terms of avoidance learning.
- **Punishment** seems to involve a **suppression** of behaviour, and is most effective when combined with the reinforcement of an incompatible response.
- **Taste aversion** experiments contribute to the view that the basic principles of conditioning *don't* apply equally to all species in all situations.
- **Preparedness** helps to explain experimental findings which show that different species acquire certain conditioned responses more or less easily, and why certain human phobias are more common than others.
- Classical conditioning involves learning about relations between environmental events, rather than a simple strengthening of S–R associations. Seligman's concept of **learned helplessness** illustrates the complexity of operant conditioning and has been used to explain human depression.
- Tolman's studies of **latent learning** show that learning can take place in the absence of reinforcement. Rats learn a **cognitive map** of a maze, not the individual movements of walking or running that take them to the food box.
- **Gestalt** psychologists saw **insight learning** as involving the perceptual restructuring of the elements that constitute a problem situation.
- Insight and trial and error aren't necessarily opposed forms of learning. Gagné's **hierarchy of learning** and Harlow's concept of **learning set** show that they're related, not exclusive. A learning set represents a special case of the more general **transfer of learning**.

Links with other topics/chapters

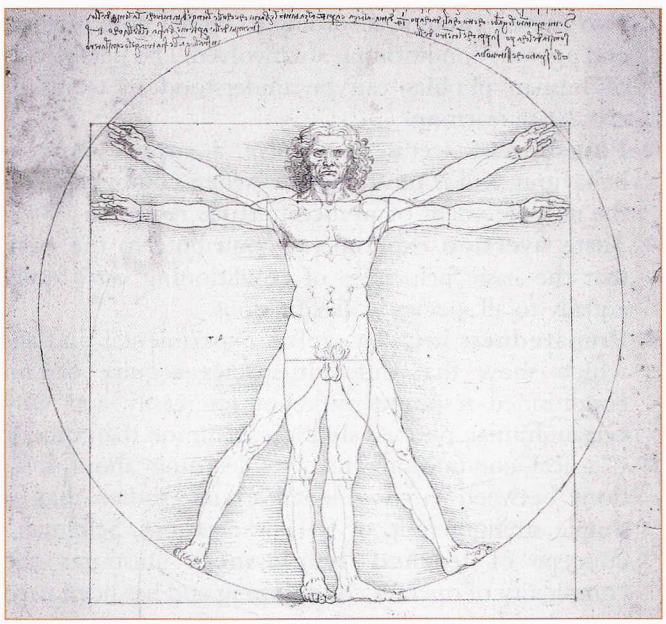
- Learning, in the form of conditioning, lies at the heart of behaviourism (Chapter 2), one of the major theoretical approaches within psychology.
- The distinction between philosophical and methodological behaviourism is important both in the history of psychology (Chapter 1) and the debate over the scientific nature of psychology (Chapter 3).
- Learning and memory are closely inter-related processes (Chapter 17).
- The Little Albert experiment is taken by many behaviour therapists (such as Eysenck) as demonstrating how all phobias are acquired in everyday life (Chapter 44).
- The 'direct unconditioning' used in the Little Peter experiment is an early example of systematic desensitisation, a major form of behaviour therapy, used in the treatment of phobias (Chapter 45).
- Shaping provides the basis of behaviour modification, used with a range of patients, including autistic children and adult schizophrenics (Chapter 45).
- Seligman and others have drawn on the concept of learned helplessness to explain human depression (Chapter 44).
- Social learning theory has been applied to the study of aggression (Chapter 29), moral and gender development (Chapters 35 and 36).
- Gestalt psychology is best known for its principles of perceptual organisation (Chapter 15), but was also concerned with problem-solving (Chapter 20)

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Revisiting the biopsychosocial model
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12

APPLICATION

HEALTH PSYCHOLOGY



INTRODUCTION AND OVERVIEW

According to Ogden (2000), health psychology represents one of several challenges that were made during the twentieth century to the *biomedical model*. This maintains that:

- diseases either come from outside the body and invade it, causing internal physical changes, or originate as internal involuntary physical changes; such diseases can be caused by chemical imbalances, bacteria, viruses or genetic predisposition
- individuals aren't responsible for their illnesses, which arise from biological changes beyond their control; people who are ill are victims

- treatment should consist of vaccination, surgery, chemotherapy or radiotherapy, all of which aim to change the physical state of the body
- responsibility for treatment rests with the medical profession
- health and illness are qualitatively different – you're either healthy or ill, and there's no continuum between them
- mind and body function independently of each other; the abstract mind relates to feelings and thoughts, and is incapable of influencing physical matter
- illness may have psychological consequences, but *not* psychological causes.

In opposition to these ideas, health psychology maintains that human beings should be seen as complex systems. Illness is often caused by a combination of biological (e.g. viruses), psychological (e.g. behaviours and beliefs), and social (e.g. employment) factors. These assumptions reflect the *biopsychosocial model* of health and illness (Engel, 1977, 1980).

The biopsychosocial model reflects fundamental changes in the nature of illness, causes of death and overall life expectancy during the twentieth century. Average life expectancy in the USA has increased from 48 in 1900 to 76 today. This is due mainly to the virtual elimination of infectious diseases – such as pneumonia, flu, tuberculosis (TB), diphtheria, scarlet fever, measles, typhoid and polio – as causes of death. Although HIV and AIDS increased the percentage of infection-related deaths during the 1980s and early 1990s, today's major killers are cardiovascular diseases (heart disease and strokes) and cancers, the former accounting for about 40 per cent of deaths in industrialised countries (Stroebe, 2000).

In fact, there's been a small but steady decline since the 1960s in deaths due to cardiovascular disease. This is due partly to improvements in medical treatment, but also to significant changes in lifestyle, specifically reduction in serum cholesterol levels and cigarette smoking. But at the same time there's been an increase in deaths due to cancer in most industrialised countries, due almost entirely to increases in lung cancer. As Stroebe (2000) says, the influence of such non-medical factors is incompatible with the biomedical model. By conceptualising disease in purely biological terms, the model has little to offer the prevention of chronic diseases through efforts to change people's health beliefs, attitudes and behaviour.

WHAT IS HEALTH PSYCHOLOGY?

A brief history

Two of the other challenges to the biomedical model cited by Ogden (2000) are:

1. psychosomatic medicine, developed in response to Freud's analysis of the relationship between mind and body (see Chapter 43), and
2. behavioural medicine, which is concerned with health care, treatment and prevention of physical diseases/physiological dysfunction, such as hypertension, addictive behaviours and obesity.

These are historical predecessors of health psychology (Penny, 1996). As we noted earlier, cardiovascular disease and cancer (and other chronic systemic disorders, such as diabetes) are the major killers in industrialised countries. The role of social and psychological factors is much more evident in the development and treatment of these diseases. The fact that they're chronic means that people may suffer them for many years, making psychological factors more relevant (Penny, 1996).

It was gradually recognised that psychologists could make a contribution to the health field, and health psychology formally began with the founding of the Division of Health Psychology within the American Psychological Association in 1978. The journal *Health Psychology* followed in 1982. In 1984, a Health Psychology Group was established within the British Psychological Society, which became the Health Psychology Section (1987), and finally the Special Group of Health Psychology (1992). There is also a European Health Psychology Society.

It became evident in the 1970s that national health spending in western countries was getting out of control. Consequently, many countries began to explore disease *prevention*. The most powerful preventative strategy may be *health promotion*, and health psychology has made significant contributions in this area since the mid-1970s (Maes & van Elderen, 1998).

Definitions

Maes & van Elderen (1998) define health psychology as:

> ... a sub-discipline of psychology which addresses the relationship between psychological processes and behaviour on the one hand and health and illness on the other hand ... however ... health psychologists are more interested in 'normal' everyday-life behaviour and 'normal' psychological processes in relation to health and illness than in psycho-pathology or abnormal behaviour ...

From a health psychology perspective, they say, someone who avoids sex following a heart attack for fear of triggering another one is showing a normal, functional response to a dysfunctional situation, rather than an abnormal phobic response. However, Turpin & Slade (1998) maintain that within applied psychology there's a controversial debate regarding the boundaries between clinical and health psychology (see Chapter 1). They believe that health psychology is an *extension* of clinical psychology, focusing specifically on people with physical health problems and their associated psychological needs:

> ... we wish to stress the commonality of psychological approaches to mental and physical health. Indeed ... health

and well-being should not be arbitrarily separated into 'mental' and 'physical'. An approach that emphasises psychological, social and biological factors will be necessary for the understanding of all health problems ... it is essential to consider all three factors when seeking to account for experiences of health and illness.

Turpin and Slade are advocating the biopsychosocial model that, as we saw earlier, is the major alternative to the biomedical model of illness.

Defining health and illness

ASK YOURSELF...

- What do you understand by the terms 'health' and 'illness'?
- Are you healthy if you're not ill, or is health a more positive state than that?

Revisiting the biomedical model

According to the biomedical model, *disease* is a deviation from a measurable biological norm. This view, which still dominates medical thinking and practice, is based on several invalid assumptions. Most importantly, the specificity assumption maintains that understanding of an illness is greater if it can be defined at a more specific biochemical level. This *reductionist* view (see Chapter 49) originated when infectious diseases were still the major causes of death (Maes & van Elderen, 1998: see above).

According to Maes and van Elderen, traditional medicine is more focused on disease than on health:

... It would be more appropriate to call our health care systems 'disease care systems', as the primary aim is to treat or cure people with various diseases rather that to promote health or prevent disease ...

By contrast with the biomedical model's *reactive* attitude towards *illness*, the biopsychosocial model underlying health psychology adopts a more *proactive* attitude towards *health*. Many definitions of health have been proposed since the 1940s, mostly in terms of the *absence* of disease, dysfunction, pain, suffering and discomfort.

Box 12.1 Defining health and illness

- According to the World Health Organization (1946, in Maes & van Elderen, 1998), *health* is 'a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity'.
- *Disease* (which reflects the medical approach) is a 'state of the body characterised by deviations from the norm or measurable biological or somatic variables' (Maes & van Elderen, 1998).
- *Illness* is 'the state of being ill, implying that illness is a more psychological concept, which is closely related to one's own perception of a health problem (e.g. pain)' (Maes & van Elderen, 1998). Subjective psychological symptoms, such as anxiety, also play a substantial role in the construction of illness. Similarly, although illness is usually associated with evidence of medical abnormality:

  ...it also incorporates aspects of the individual's wider functioning, self-perceptions and behaviours, and requires consideration of social context and societal norms. (Turpin & Slade, 1998)

- The concepts of health and illness incorporate both physical, psychological and social aspects, reflecting the biopsychosocial model.

Revisiting the biopsychosocial model

In contrast with the biomedical model's reductionist view, the biopsychosocial model adopts a *holistic* approach – that is, the *person as a whole* needs to be taken into account. It maintains that both '*micro-level*' (small-scale causes, such as chemical imbalances) and '*macro-level*' (large-scale causes, such as the extent of available social support) processes interact to determine someone's health status (see Figure 12.1).

Culture and health

Culture represents one of the 'macro-level' processes referred to above (see Chapter 47). *Cross-cultural health psychology* (Berry, 1994) involves two related domains:

1. the earlier, more established study of how cultural factors influence various aspects of health

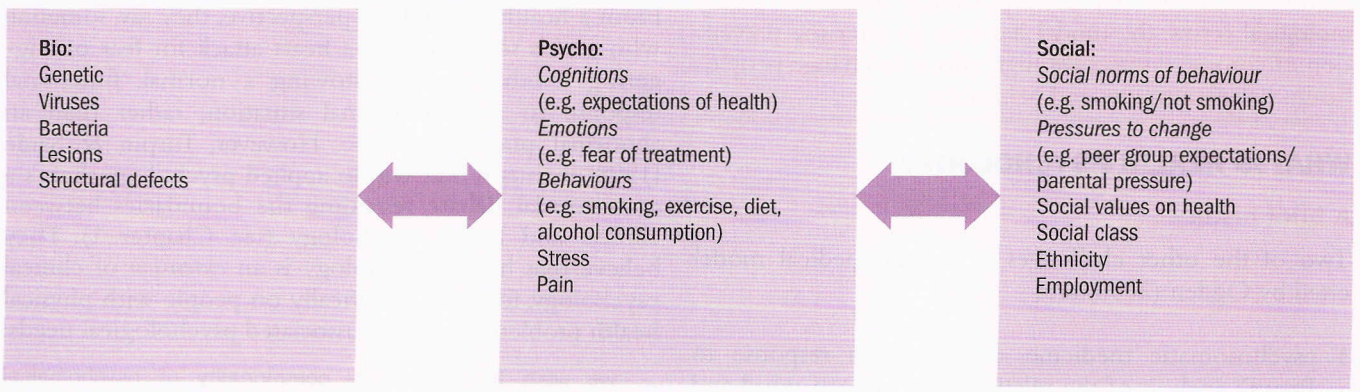
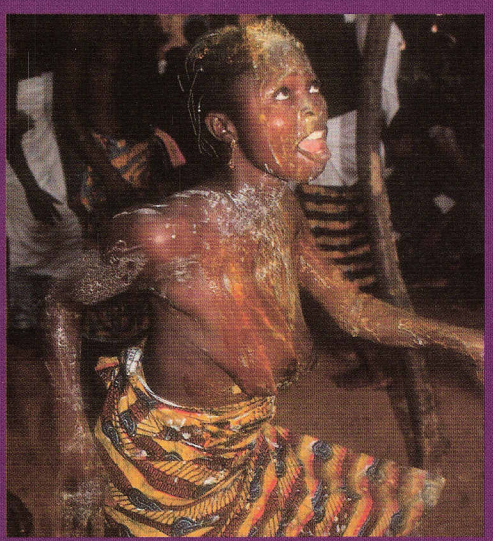


Figure 12.1 The biopsychosocial model of health and illness (adapted from Ogden, Open University Press, 2000)

2. the more recent and very active study of the health of individuals and groups as they settle into and adapt to new cultural circumstances, through migration, and of their persistence over generations as ethnic groups.

Box 12.2 Health and disease as cultural concepts

- Many studies have shown that the very concepts of health and disease are defined differently across cultures. While 'disease' may be rooted in pathological biological processes (common to all), 'illness' is now widely recognised as a culturally influenced subjective experience of suffering and discomfort (Berry, 1998: see Box 12.1).
- Recognising certain conditions as either healthy or as a disease is also linked to culture. For example, trance is seen as an important curing (health-seeking) mechanism in some cultures, but may be classified as a sign of psychiatric disorder in others. Similarly, how a condition is expressed is also linked to cultural norms, as in the tendency to express psychological problems *somatically* (in the form of bodily symptoms) in some cultures (e.g. Chinese) more than in others (see Chapter 43).



A Minah medium of the violent God Jagli, who induces trances and wild dances

- Disease and disability are highly variable. Cultural factors (such as diet, substance abuse and social relationships within the family) contribute to the prevalence of diseases including heart disease, cancer and schizophrenia (Berry, 1998).

Acculturation

Cross-cultural psychologists believe that there's a complex pattern of continuity and change in how people who've developed in one cultural context behave when they move to and live in a new cultural context. This process of adaptation to the new ('host') culture is called *acculturation*. With increasing acculturation (the longer immigrants live in the host country), health status 'migrates' to the national norm (Berry, 1998).



Was ET's near-fatal illness due to acculturation – or did he simply want to go home?

For example, coronary heart disease (CHD) among Polish immigrants to Canada increased (their rates were initially lower), while for immigrants from Australia and New Zealand the reverse was true. Data for immigrants from 26 out of 29 countries shifted their rates towards those of the Canadian-born population. Similar patterns have been found for stomach and intestinal cancer among immigrants to the USA (Berry, 1998).

ASK YOURSELF...

- How could you explain such findings?
- What is it about living in a different cultural situation that can increase or decrease your chances of developing life-threatening diseases?

One possibility is exposure to widely shared risk factors in the physical environment (e.g. climate, pollution, pathogens), over which there's little choice. Alternatively, it could be due to choosing to pursue assimilation (or possible integration) as the way to acculturate. This may expose immigrants to *cultural* risk factors, such as diet, lifestyle and substance abuse. This 'behavioural shift' interpretation would be supported if health status both improved *and* declined relative to national norms.

However, the main evidence points to a *decline*, supporting the 'acculturative stress' (or even 'psychopathology') interpretation – that is, the very process of acculturation may involve risk factors that can reduce health status. This explanation is supported by evidence that stress can lower resistance to diseases such as hypertension and diabetes (Berry, 1998: see pages 206–208).

Other aspects of the biopsychosocial model include the beliefs that:

- individuals aren't just passive victims, but are responsible for taking their medication, and changing their beliefs and behaviour

- health and illness exist on a continuum – people *aren't* either healthy or ill, but progress along the continuum, in both directions
- psychological factors contribute to the *aetiology* (causation) of illness – they're not just consequences of illness.

ASK YOURSELF...
- Can you think of examples of where being ill was (partly) caused by psychological factors, *and* where your illness affected you psychologically?

According to Ogden (2000), health psychology aims to:

- *evaluate* the role of behaviour in the aetiology of illness, such as the link between smoking, CHD, cholesterol level, lack of exercise, high blood pressure (BP) and stress
- *predict* unhealthy behaviours – for example, smoking, alcohol consumption and high-fat diets are related to beliefs, and beliefs about health and illness can be used to predict behaviour
- *understand* the role of psychological factors in the experience of illness. For example, understanding the psychological consequences of illness could help to alleviate pain, nausea, vomiting, anxiety and depression
- *evaluate* the role of psychological factors in the treatment of illness.

These aims are put into practice by:

- *promoting* health behaviour, such as changing beliefs and behaviour
- *preventing* illness – for example, by training health professionals to improve communication skills and to carry out interventions that may help prevent illness.

MODELS OF HEALTH BEHAVIOUR

A fundamentally important question for health psychology is why people adopt – or don't adopt – particular health-related behaviours. Models of health behaviour try to answer this question, and most of those discussed below belong to the family of *expectancy-value models* (Stroebe, 2000). These assume that decisions between different courses of action are based on two types of cognition:

- *subjective probabilities* that a given action will produce a set of expected outcomes
- *evaluation* of action outcomes.

Individuals will choose from among various alternative courses of action the one most likely to produce positive consequences and avoid negative ones. Different models differ in terms of the *types* of belief and attitude that should be used in predicting a particular class of behaviour. They are rational reasoning models, which assume that individuals consciously deliberate about the likely consequences of the behavioural alternatives available to them before engaging in action.

ASK YOURSELF...
- Do you agree with this view of people as rationally/consciously choosing health behaviours?
- How would you explain your own behaviours in relation to diet, smoking, alcohol, exercise, and so on?

The health belief model (HBM)

This was originally developed by social psychologists working in the US Public Health Service (Becker, 1974; Janz & Becker, 1984). They wanted to understand why people failed to make use of disease prevention and screening tests for early detection of diseases not associated with clear-cut symptoms (at least in the early stages). It was later also applied to patients' responses to symptoms, and compliance with/adherence to prescribed medication among acutely and chronically ill patients. More recently, it's been used to predict a wide range of health-related behaviours (Ogden, 2000).

The HBM assumes that the likelihood that people will engage in a particular health behaviour is a function of:

- the extent to which they believe they're *susceptible* to the associated disease
- their perception of the *severity of the consequences* of getting the disease.

Together, these determine the *perceived threat* of the disease. Given the threat, people then consider whether or not the action will bring benefits that outweigh the costs associated with the action. In addition, *cues to action* increase the likelihood that the action will be adopted; these might include advice from others, a health problem or mass-media campaigns. Other important concepts include *general health motivation* (the individual's readiness to be concerned about health matters) and *perceived control* (for example, 'I'm confident I can give up smoking': Becker & Rosenstock, 1987).

Evaluation of the HBM

The HBM allows for demographic variables (such as age and gender) and psychological characteristics (such as ways of coping with stress and locus of control: see below) that might affect health beliefs (Forshaw, 2002). For example, young women are likely to engage in dieting behaviour. So:

... the HBM covers most, if not all, of the factors which, on the face of it, should be relevant in determining if a person engages in a particular behaviour ...

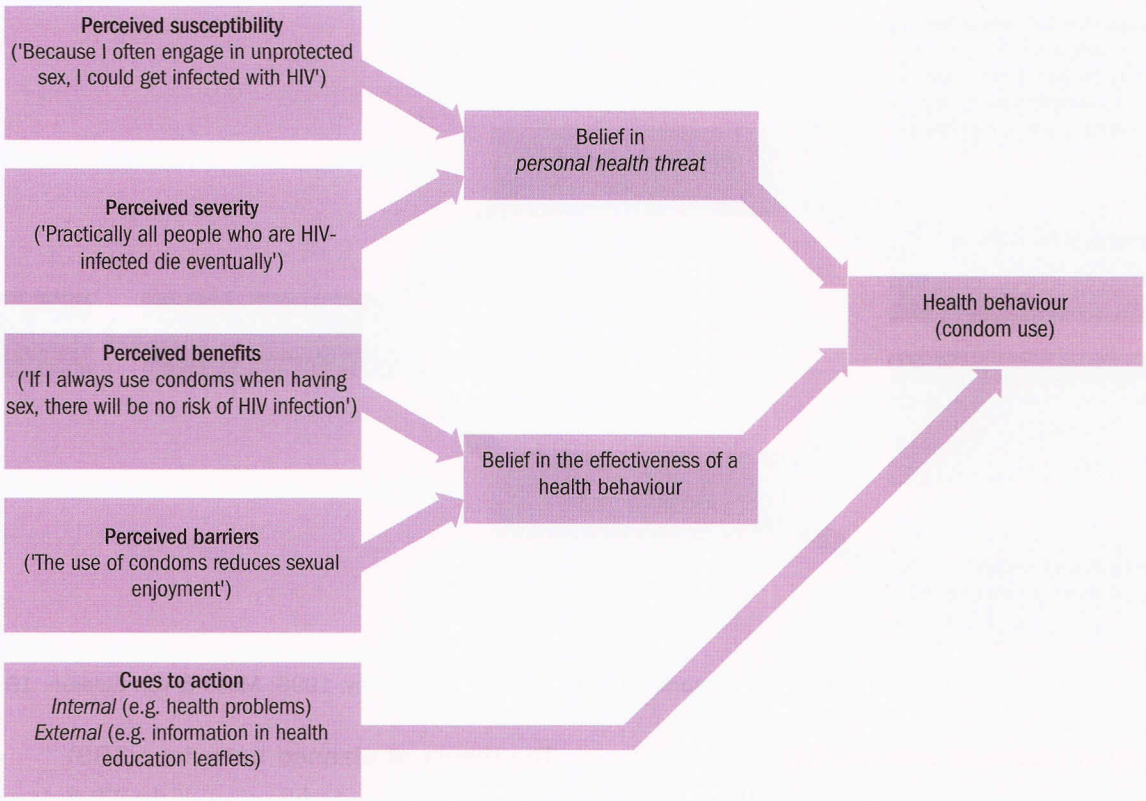


Figure 12.2 Main components of the health belief model (adapted from Stroebe, 2000, reproduced with kind permission of the Open University Press/McGraw-Hill publishing company)

There's considerable evidence supporting the HBM's predictions in relation to a wide range of behaviours. Dietary compliance, safe sex, having vaccinations, having regular dental checks, participation in regular exercise programmes, are all related to people's perception of their susceptibility to the related health problem, their belief that the problem is severe, and their perception that the benefits of preventative action outweigh the costs (e.g. Becker, 1974; Becker & Rosenstock, 1984; Becker *et al.*, 1977).

However, there's also conflicting evidence. For example, Janz & Becker (1984) found that healthy behavioural intentions are related to *low* perceived seriousness (not high, as the model predicts). Also, several studies have suggested an association between *low* susceptibility (not high) and healthy behaviour (Ogden, 2000).

The HBM has also been criticised for assuming that people's behaviour is governed by rational decision-making processes, overemphasising the individual, and ignoring emotional factors such as fear and anxiety. There's also been a lack of standardised measures used to assess the model's various components, such as perceived susceptibility (Penny, 1996). A factor that may explain the persistence of unhealthy behaviours is people's inaccurate perceptions of risk and susceptibility.

Box 12.3 Are we unrealistic optimists?

- Weinstein (1983, 1984) asked participants to examine a list of health problems and to state 'Compared with other people of your age and sex, are your chances of getting [the problem] greater than, about the same, or less than theirs?' Most believed they were *less* likely, displaying what Weinstein called *unrealistic optimism*: not everyone can be less likely to experience a particular problem! Weinstein identified four cognitive factors contributing to unrealistic optimism:
  (i) lack of personal experience with the problem
  (ii) belief that the problem is preventable by individual action
  (iii) belief that if the problem hasn't yet appeared it won't appear in the future
  (iv) belief that the problem is uncommon.
- This suggests that perception of one's own risk *isn't* a rational process. People show *selective focus*, ignoring their own risk-taking behaviour (for example, the times they've not used a condom) and concentrating primarily on their risk-reducing behaviour (the times they have used one).
- This is compounded by the tendency to ignore others' risk-reducing, and emphasise their risk-taking, behaviour. These tendencies produce unrealistic optimism.

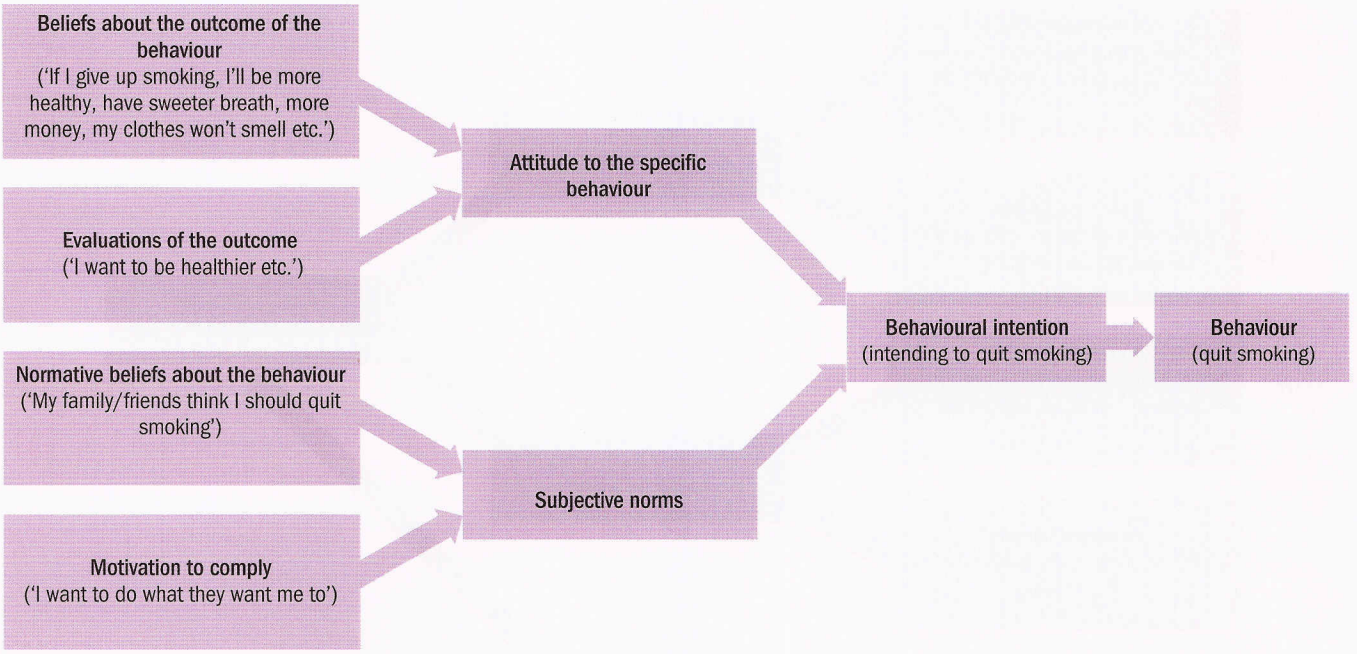


Figure 12.3 Main components of the theory of reasoned action (adapted from Penny, 1996; Maes & van Elderen, 1998)

The theory of reasoned action (TRA)

This is a more general theory than the HBM. It's been used extensively to examine predictions of behaviour and was central to the debate within social psychology regarding the relationship between attitudes and behaviour (see Chapter 24). TRA (Ajzen & Fishbein, 1970; Fishbein, 1967; Fishbein & Ajzen, 1975) assumes that behaviour is a function of the *intention* to perform that behaviour. A behavioural intention is determined by:

- a person's *attitude* to the behaviour, which is determined by (a) beliefs about the outcome of the behaviour, and (b) evaluation of the expected outcome
- subjective norms: a person's beliefs about the desirability of carrying out a certain health behaviour in the social group, society and culture s/he belongs to.

Evaluation of the TRA

The TRA has successfully predicted a wide range of behaviours, including blood donation, smoking marijuana, dental hygiene and family planning. However, attitudes and behaviour are only *weakly* related: people don't always do what they say they intend to (see Chapter 24). The model doesn't consider people's past behaviour, despite evidence that this is a good predictor of future behaviour. Nor does it account for people's irrational decisions (Penny, 1996). Similarly, Maes & van Elderen (1998) argue that:

> ... The assumption that behaviour is a function of intentions ... limits the applicability or heuristic value of the model to volitional behaviour, that is, to behaviours that are perceived to be under personal control ...

The theory of planned behaviour (TPB)

This represents a modification of the TRA. It reflects the influence of Bandura's (1977a, 1986) concept of *self-efficacy* – our belief that we can act effectively and exercise some control over events that influence our lives (see Chapter 35). Ajzen (1991) added the concept of self-efficacy to the TRA, claiming that control beliefs are important determinants of *perceived behavioural control* (PBC). This is crucial for understanding motivation: if, for example, you think you're unable to quit smoking, you probably won't try. PCB can have a *direct* effect on behaviour, bypassing behavioural intentions.

Evaluation of the TPB

The TPB has been used to assess a variety of health-related behaviours. For example, Brubaker & Wickersham (1990) examined its different components in relation to testicular self-examination: attitude, subjective norm and behavioural control (measured as self-efficacy) all correlated with the behavioural intention. Schifter & Ajzen (1985) found that weight loss was predicted by the model's components, especially perceived behavioural control.

The TPB has the advantage over the HBM (as does the TRA) of including a degree of irrationality (in the form of evaluations), and it attempts to address the problem of social and environmental factors (normative beliefs). The extra 'ingredient' of perceived behavioural control provides a role for past behaviour. For example, if you've tried several times in the past to quit smoking, you're less likely to believe you can do so successfully in the future and, therefore, you're less likely to intend to try (Ogden, 2000; Penny, 1996).

Box 12.4 Are perceived behavioural control (PBC) and self-efficacy the same thing?

- Povey *et al.* (2000) studied the TPB in relation to dieting. Their aim was partly to see if PBC and self-efficacy are separate concepts.
- They asked people about their behaviour and intentions regarding eating a low-fat diet and five portions of fruit and vegetables a day.
- They concluded that they *are* different. PBC refers to whether a person believes they can make a difference to their own behaviour, while self-efficacy is specifically related to how difficult they perceive the proposed health behaviour to be.
- *Both* factors predicted the intention to have a low-fat diet and eat five portions per day. But self-efficacy proved the stronger predictor.
- While Povey *et al.* took these findings to support the TPB, there's also evidence for the role of self-efficacy (Forshaw, 2002).

An evaluation of models of health behaviour

- A limitation shared by all the models is their failure consistently to predict behavioural intentions. Most seriously of all, they're unable to predict actual behaviour (the *intention–behaviour gap*).
- One response to these criticisms has been the concept of *implementation intentions* (Gollwitzer, 1993). Carrying out an intention involves the development of specific plans about what to do given a specific set of environmental conditions. These plans describe the 'what' and 'when' of a particular behaviour. There's some evidence that encouraging people to make implementation intentions can actually increase the correlation between intentions and behaviour for taking vitamin pills and performing breast self-examination (Ogden, 2000). Overall, though, current models are relatively poor predictors of actual behaviour (Turpin & Slade, 1998).
- Forshaw (2002) points out that our models of health behaviour are *culturally relative*: we cannot just assume that they apply universally. He cites a study by Sissons Joshi (1995) of causal beliefs about insulin-dependent diabetes in England and India. Far more Indian diabetics believed that eating too much sweet food caused their diabetes (38 per cent compared with 6 per cent of the English sample). Some people in each sample (more in the Indian sample) were reluctant to think about the causes. The reluctant English patients tended to be those who reported not having adjusted very well to the disease, but in the Indian sample adjustment *wasn't* related to causal reasoning.

Psychosocial determinants of sexual risk behaviour

Abstaining from penetrative sex is a rather unattractive option for most sexually active individuals. This is why research into strategies for reducing the risk of AIDS has mainly focused on psychosocial determinants of condom use, among both heterosexuals and gay men (Stroebe, 2000).

Heterosexuals

Sheeran *et al.* (1999) conducted a meta-analysis (a 'study of studies': see Chapter 45) of factors influencing condom use, based on 121 separate studies. They found strong support for TRA and TPB (see above). Attitudes towards condom use, social norms and intentions to use condoms were strongly related to condom use in both longitudinal and cross-sectional studies. There was also support for TPB's additional assumption that PBC is likely to increase substantially the predictability of behaviour.

Sutton *et al.* (1999) failed to find a significant effect of PBC among a national sample of 946 young people in England. However, they did report a significant influence of attitudes and subjective norms. This may have been because they all believed they had high control over condom use, regardless of the extent of their sexual experience (Stroebe, 2000).

ASK YOURSELF...

- How would the HBM account for condom use?
- Would you expect it to be more/less successful than the other models?

Sheeran *et al.* found less support for the HBM. Condom use should be determined by perceived threat of HIV infection (severity × vulnerability) and the perceived costs/benefits of condom use. But perceived threat seems to play a rather minor role. An even weaker association between vulnerability and condom use was reported in a meta-analysis of samples of heterosexuals and gay men (Gerrard *et al.*, 1996).

Stroebe (2000) suggests that one factor that might have reduced the relationship between vulnerability and condom use is that the threat of HIV has now been known for many years, and individuals who were willing and able to adopt precautionary behaviour have already done so. This may also explain why knowledge of HIV and AIDS fails to influence condom use. While health education has to be continued to maintain the current level of knowledge, especially among the most vulnerable groups (adolescents), Stroebe observes that:

> ... by now very few adult homosexual men are unaware of the health risks involved in unprotected anal intercourse. Thus the people who still engage in this high-risk activity do so knowing that it is dangerous.



The original AIDS public health warning ad: AIDS as the scary iceberg. But perceived threat seems to play a rather minor role in condom use

Sheeran *et al.* (1999) also found evidence of a strong association between (a) 'carrying a condom'/'condom availability' and (b) communication about condom use, with condom use. Neither of these two variables features in any of the models, although they could be seen as relevant to Gollwitzer's concept of *implementation intentions* (see above). Clearly, the availability of condoms is a precondition for their use, but carrying them reflects a strong intention to use them. Discussion between partners as to whether condoms should be used was strongly associated with their actual use during sex.

Gay men

This last finding is consistent with results of intervention studies, which show that training in sexual negotiation skills increases safe sex among gay men (Stroebe, 2000). Overall, findings from studies involving gay samples based on the TRA and TPB have been less consistent than those involving heterosexuals.

KEY STUDY 12.1 Partner relationship is the key to safe sex

- Stroebe cites a study which found that the ability of the TRA and TPB to predict safe sex (condom use and abstention from anal sex) depended very much on the relationship with the partner.
- With a steady partner, the intention to engage in safe sex was strongly related to attitudes, subjective norms and PBC. But with a casual partner, only PBC proved to be a significant predictor of safe-sex intentions.
- The same pattern emerged regarding the prediction of actual behaviour. TRA and TPB accounted for 64 per cent of the variance in safe-sex behaviour with steady partners, but only 21 per cent with casual partners. Stroebe concludes that:

  ... whether these homosexual men engaged in safe sex with their steady partner depended to a large extent on their intentions, but their safe sex behaviour with casual partners depended on their assertiveness and their social skills in persuading their casual partner to keep it safe ...

- Another relevant study (cited in Stroebe) found that the better the relationship with a steady partner, the more likely gay men were to take protective measures *with a casual partner*. But the relationship with the steady partner was *unrelated* to whether or not they had extra-relationship sex. These relational measures improved the prediction of behaviour, even when PBC and intentions were controlled.

Implications for interventions

According to Stroebe (2000):

- interventions that rely on epidemiological information to emphasise the severity of AIDS, and the vulnerability of the target population, are likely to fail; these factors don't appear to be a major determinant of condom use – instead communications should aim at eroticising condom use
- persuasive communications shouldn't only target beliefs, underlying attitudes, subjective norms, and PBC, but also try to persuade people to be prepared, and to discuss condom use with their prospective partners
- persuasive communications aimed at increasing condom use among gay men must differentiate clearly between condom use in steady as opposed to casual relationships. In the former, attitudes and subjective norms seem to be the crucial determinants of condom use, while in the latter it's PBC; persuasion and skills training, respectively, would probably be more effective.

Perceptions of invulnerability

According to Ogden (2000), one of the most consistent findings to emerge from the research is the perception of personal invulnerability to HIV, in both heterosexual and homosexual populations (see Box 12.3). For example, Woodcock *et al.* (1992) interviewed 125 16–25-year-olds about their sexual behaviour and examined how they evaluated their personal risk. Even though most acknowledged some degree of risk, some managed to dismiss it by claiming 'it would show by now', 'it was in the past', 'AIDS wasn't around in those days', 'it's been blown out of proportion' and 'AIDS is a risk you take in living'. The themes of being run over by a bus, and 'it

couldn't happen to me', were also quite common. These are classic examples of people *rationalising* behaviour that conflicts with important aspects of self-concept (see Festinger's (1957) *cognitive dissonance theory*: Chapter 24). Most commonly, people denied they had ever put themselves at risk.

While most cognitive models, such as the HBM, TRA and TPB, emphasise people's rational decision-making, including their assessment of personal susceptibility to/being at risk from HIV:

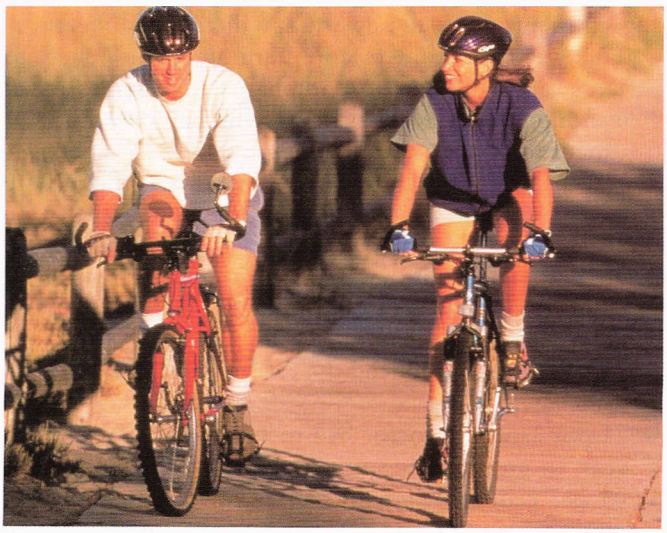
> ... many people do not appear to believe that they are themselves at risk, which is perhaps why they do not engage in self-protective behaviour, and even when some acknowledgement of risk is made, this is often dismissed and does not appear to relate to behaviour change. (Ogden, 2000)

Exercise: doing what's good for you

Although most people, if asked, would agree that regular exercise is essential for improving health, such beliefs don't always translate into action. Even in the USA, where health consciousness appears to be far higher than in Europe, only 15 per cent of the adult population exercise regularly and intensively enough in their leisure time to meet current guidelines for fitness (three times per week for at least 20 minutes at a time). This figure changed very little during the 1990s, and we exercise less as we move from adolescence into adulthood (Stroebe, 2000).

ASK YOURSELF...

- What forms of exercise do you engage in on a fairly regular basis?
- Why do you do it?
- Why do you think people exercise less as they get older?
- How do you think exercise benefits you?



The pleasures of exercise

The benefits of exercise

Physical benefits

Like high-fat, low-fibre diets, lack of exercise is correlated with an increased risk of CHD, and people who exercise regularly seem to accumulate less body fat (Carlson *et al.*, 2000). There's strong evidence that regular, vigorous, dynamic exercise decreases the risk of hypertension, cardiovascular disease, colon cancer, non-insulin-dependent diabetes mellitus and death from all causes. It also appears to reduce symptoms of depression and anxiety, and improve mood.

Many researchers believe that *aerobic* or endurance exercise, including jogging, cycling and swimming, is superior to other forms of exercise for improving cardiovascular health. These activities involve expenditure of considerable amounts of energy, and increase blood flow and respiration, thereby stimulating and strengthening the heart and lungs, and increasing the body's efficiency in using oxygen.

Box 12.5 Do you have to sweat to benefit from exercise?

- According to the American College of Sports Medicine (1979, in Stroebe, 2000), the most effective regime for developing and maintaining cardiovascular fitness is to exercise three to five times a week for 15–60 minutes per session, at more than 60 per cent of maximum heart rate.
- However, several short exercise sessions may be just as beneficial to men at risk of heart disease as a single lengthy burst of activity.
- Research conducted for the American Heart Association (in Henderson, 2000) examined the exercise habits and medical histories of over 7300 men with an average age of 66. It found that physical activity needn't last longer than 15 minutes to reduce the risk of heart disease. The health benefits of a single lengthy exercise session were no greater than those that accrued from several short ones, provided the total amount of exercise was the same. Furthermore, men who participated in sport showed similar risks of heart disease as those who only walked or climbed stairs – provided the energy output was similar.
- However, the study also found that the *reduction in risk* of heart disease for men who jogged, swam, played tennis or did aerobics (vigorous activities) was *greater* than for those who played golf or danced (moderate activities).

Psychological benefits

The effects of exercise on mood and cognition have been investigated by sport and exercise psychologists, both in the USA and the UK (see Chapter 31). But sport psychologists aren't interested only in 'professional' sportsmen and women. Exercise appears to be beneficial for people's mental health in several ways:

- many exercisers report feeling 'high' after exercise (the 'feel-good' effect: Carlson *et al.*, 2000)

- aerobic exercise reduces heart-rate response to psychological stress, making exercisers less vulnerable to the negative effects of stress (Carlson *et al.*, 2000: see pages 204–209)
- aerobic fitness programmes, such as jogging, dancing and swimming, are now frequently prescribed as treatments for depression; there's evidence from both correlational and intervention studies that physical activity relieves the symptoms of depression and anxiety, and generally improves mood (Stroebe, 2000: see Chapter 45).

PSYCHOLOGICAL ASPECTS OF ILLNESS

The patient–practitioner relationship

Patient compliance: doing what you're told

Haynes *et al.* (1979) defined compliance as:

> ... the extent to which the patient's behaviour (in terms of taking medications, following diets or other lifestyle changes) coincides with medical or health advice.

Damrosch (1995) prefers the term adherence, since this implies a more mutual relationship between the patient and the practitioner. 'Compliance' implies that the practitioner is an authority figure, while the patient is a fairly passive recipient (see Chapter 27).

ASK YOURSELF...

- Have you ever been non-compliant? For example, have you ever failed to complete a course of antibiotics?
- Why didn't you comply?
- Why do you think it's important to understand non-compliance?

It's an important area of research primarily because following health professionals' recommendations is considered essential to patient recovery. According to Damrosch (1995), poor adherence is almost epidemic. Reviews of adherence research have shown 20–80 per cent non-adherence, depending on the patient population and definitions used. Patients with chronic conditions (such as hypertension and diabetes) are less adherent than those with short-term problems. According to Ogden (2000), about half these patients are non-compliant.

But even with acute conditions, adherence is problematic. Patients are notorious for prematurely discontinuing antibiotics, even if prescribed for just a few days. Remarkably, patients who've undergone renal, liver and heart transplants often fail to comply, despite good adherence prior to the transplant. Despite being informed that this can result in organ rejection and death, 34 per cent of renal patients still non-adhere. About 20 per cent of rejections and deaths in heart recipients are due to non-adherence (Damrosch, 1995). However, patients tend to overestimate their degree of compliance/adherence, because they wish to convey a socially desirable impression. Practitioners also tend to overestimate their patients' compliance. More *objective* methods of assessing compliance include pill counts, records of appointment-keeping, physical testing, measures of cholesterol (to check on diet) and electronically monitored bottle caps (which record the date/time of every bottle-opening: Damrosch, 1995).

Box 12.6 What makes patients comply?

According to Damrosch (1995), there's theoretical agreement regarding the importance of five factors that make patients most likely to comply:

1. they perceive the high severity of the disorder (*serious consequences*)
2. they believe the probability of getting the disorder is also high (personal *susceptibility*)
3. they have confidence in their ability to perform the behaviour prescribed to reduce the threat (*self-efficacy*)
4. they're also confident that the prescribed regimen will overcome the threat (*response-efficacy*)
5. they have the intention to perform the behaviour (*behavioural intention*).

Damrosch refers to these five points as the 'double high/double efficacy/behavioural intention model'.

ASK YOURSELF...

- Which models of health behaviour do these five factors derive from?

Practitioner variables

Doctors' sensitivity to patients' non-verbal expression of feelings (such as tone of voice) is a good predictor of adherence. For example, Dimatteo *et al.* (1993) conducted a two-year longitudinal study of over 1800 patients with diabetes, heart disease or hypertension, and 186 doctors. The doctors' job satisfaction, willingness to answer questions, and practice of scheduling follow-up appointments, were all powerful predictors of adherence.

The way practitioners communicate their beliefs to patients also influences compliance. Misselbrook & Armstrong (2000) asked patients whether they'd accept treatment to prevent a stroke, and presented the effectiveness of this treatment in four different ways. Although the actual risk was the same in all four cases:

- 92 per cent said they'd accept the treatment if it reduced their chances of a stroke by 45 per cent (*relative risk*)
- 75 per cent if it reduced the risk from 1/400 to 1/700 (*absolute risk*)
- 71 per cent if a doctor had to treat 35 patients for 25 years to prevent one stroke (*number needed to treat*)
- 44 per cent if treatment had a 3 per cent chance of doing them good and a 97 per cent chance of doing no good/not being needed (*personal probability of benefit*).

According to Ogden (2000), these results indicate that:

> ... not only do health professionals hold their own subjective views, but ... these views may be communicated to the patient in a way that may then influence the patient's choice of treatment.

Doctor–patient communication

According to the traditional model of doctor–patient communication (the 'education' model), the doctor is an expert who communicates his/her knowledge to a naïve patient. The doctor is an authority figure, who instructs or directs the patient. Research has suggested that the communication process may be improved if a sharing, more interactive (two-way), patient-centred consulting style is used. This may produce greater patient commitment to any advice given, potentially higher levels of compliance, and greater patient satisfaction (implied by the use of 'adherence': see above).

However, a field experimental study by Savage & Armstrong (1990) of patients attending a group practice in an inner-city area of London found a preference for the education model. Patients (aged 16–75, without serious illnesses) seemed to prefer an authority figure, who offered a formal diagnosis, to a sharing doctor who asked for their views.

Patient and regimen variables

Compliance is likely to decrease over time. It's also more problematic for conditions with no obvious symptoms, especially if treatment produces unpleasant side-effects, such as reduced sex drive. Also, the more complex the regimen, the lower the adherence. For example, home monitoring of blood sugar up to ten times per day, and multiple insulin injections has been shown greatly to reduce or eliminate adherence. But this is a life-long practice, which is probably daunting to many patients (Damrosch, 1995).

According to Ley's (1981, 1989) *cognitive hypothesis model*, compliance can be predicted by a combination of:

- satisfaction with the process of consultation (see above)
- understanding of the information given
- recall of this information.

Despite some supporting evidence, Ley's model is consistent with the education model of doctor–patient communication.

Preferring a more interactive approach, Ogden and her colleagues have investigated (a) the level of agreement between patient and health professional, and (b) the impact of this agreement on patient outcome. It's important to understand the extent to which the two individuals 'speak the same language', share the same beliefs, and agree about the desired content and outcome of any consultation. This is especially relevant to general practice, where patient and health professional perspectives are most likely to coincide.

KEY STUDY 12.2 Not seeing eye to eye on depression and obesity

- Ogden *et al.* (1999) explored GPs' and patients' models of depression. They agreed about the importance of mood-related symptoms, psychological causes and non-medical treatments. But GPs had a more medical model.
- Ogden *et al.* (2001) compared GPs' and patients' views on obesity. They agreed about most psychological, behavioural and social causes, but differed consistently regarding medical causes. In particular, patients rated glandular or hormonal problems, slow metabolism and other medical causes more highly than did the GPs.
- So, compared with their patients, GPs had a *more* medical model of depression and a *less* medical model of obesity.
- It's possible that such disagreements may produce low compliance to medication and to recommended changes in behaviour, as well as low satisfaction with the consultation (Ogden, 2000).

Once a treatment is prescribed, the patient is often left to his/her own devices. Adherence then depends on his/her interpretation of the illness, treatment and symptoms. Siegel *et al.* (1999) studied middle-aged and older HIV-positive people and their drug adherence. Once taking the drugs, they'd question their efficacy and safety if they noticed any unusual symptoms. If they perceived these as side-effects of the drugs, or if the drugs seemed to be having no effect, the conditions were ripe for non-adherence. But according to Forshaw (2002):

- because a drug *seems* to be doing nothing, doesn't mean it is, and unpleasant symptoms that appear after taking the drug aren't necessarily caused by the drug
- drugs can sometimes take a while to start working, but people often expect immediate results. Also, we often think that if a problem seems to have cleared up, then it has; people commonly stop taking their antibiotics when the symptoms have eased – but the symptoms often recur because they're just the final stage of unseen bodily processes.

Forshaw recommends that:

> ... Careful education of patients as to exactly what to expect from a treatment can improve adherence, especially in cases where non-adherence stems from lack of knowledge rather than rebelliousness ...

Compliance and the placebo effect

Evidence suggests that simply adhering to medical recommendations to take pills may benefit patients

recovering from a heart attack, *regardless* of whether the pills taken are active drugs or inert placebos (see Chapter 45). This has implications for understanding the mind/body relationship ('I believe I've taken my medication' is related to actually getting better: see Chapter 49), and the central role of beliefs and expectations in health and illness (Ogden, 2000).

Ogden cites data suggesting that the best predictor of mortality in men who'd survived a heart attack *wasn't* taking the lipid-lowering drug compared with a placebo, but adherence to taking *any drug at all* (active or placebo). Adherers had lower mortality after five years than non-adherers in both experimental and placebo groups. Ogden concludes by saying:

... 'doing as the doctor suggests' appears to be beneficial to health, but not for the traditional reasons ('the drugs are good for you') but perhaps because by taking medication, the patient expects to get better ...

Pain

What is it?

ASK YOURSELF...
- Can you describe the experience of pain?
- Are there different kinds of pain?
- If so, how do they differ?
- Is pain a purely physical, bodily phenomenon?

According to the International Association for the Study of Pain (IASP), pain is:

... an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage ...

This definition indicates that pain is a subjective, personal experience involving both sensory (e.g. shooting, burning, aching) and emotional (e.g. frightening, annoying, sickening) qualities. Fear/anxiety can increase the perception of pain, and depression often accompanies chronic pain and is positively associated with the pain intensity ratings of chronic pain patients (Bradley, 1995).

Pain is basically a physiological phenomenon, whose biological function is to provoke special reactive patterns aimed at the removal/avoidance of the noxious stimulus. But this doesn't explain the pain *experience*, which includes both the pain sensation, and certain autonomic responses and 'associated feeling states' (Zborowski, 1952). For example, understanding the physiology of pain cannot explain the acceptance of intense pain in torture, or the strong emotional reactions of certain individuals to the slight sting of a hypodermic needle.

The IASP definition recognises that an individual needn't suffer actual tissue damage at a specific body site in order to perceive pain at that site, as in the 'phantom limb' phenomenon (see Chapter 4). In describing treatment of phantom limb pain, Ramachandran & Blakeslee (1998) maintain that:

... pain is an *opinion* on the organism's state of health rather than a mere reflexive response to an injury. There is no direct hotline from pain receptors to 'pain centres' in the brain. On the contrary, there is so much interaction between different brain centres, like those concerned with vision and touch, that even the mere visual appearance of an opening fist can actually feed all the way back into the patient's motor and touch pathways, allowing him to feel the fist opening, thereby killing an illusory pain in a nonexistent hand.

According to Wall (in O'Connell, 2000):

'Pure' pain is never detected as an isolated sensation. It's always accompanied by emotion and meaning, so that each pain is unique to the individual.



Chinese torture. The prisoner kneels on a steel chain while tied to a cross, forced to remain in that position for days

Pain and injury

Phantom limb pain is one of several examples of how it's possible to experience pain in the absence of any physical damage/injury. Others include *neuralgia* (nerve pain) and *caucalgia* (a burning pain that often follows a severe wound, such as stabbing), both of which develop *after* the wound/injury has healed. This represents the converse of phantom limb pain. People with *congenital analgesia* are incapable of feeling pain (a potentially life-threatening disorder), while those with *episodic analgesia* only experience pain minutes or even hours after the injury has occurred. This can sometimes be *life-saving*, as when soldiers suffer horrific injuries but suffer little/no pain while waiting for medical attention.

Pain as a cultural phenomenon

According to Rollman (1998), to say that pain is universal doesn't imply that it can be understood in only physiological or biochemical terms. The human pain

experience comprises sensory, emotional and cognitive components. In both its expression and management, biological, psychological and social factors interact in complex ways. The influence of culture on the expression of pain almost certainly begins at birth, and extends throughout a person's lifetime.

In human society, pain acquires specific social and cultural significance. Members of different cultures may assume differing attitudes towards different types of pain. According to Zborowski (1952), two of these attitudes may be described as *pain expectancy* and *pain acceptance*:

- *pain expectancy* refers to the anticipation of pain as being unavoidable in a given situation (such as childbirth, sport or battle)
- *pain acceptance* is the willingness to experience pain, which is manifested mostly as the inevitable component of culturally accepted experiences (such as initiation rites and medical treatment).

So, labour pain is expected as part of childbirth. But in most western cultures it's not accepted (and various steps are taken to keep it to a minimum), while in others (such as Poland) it's both expected and accepted (and little or nothing is done to relieve it).

Cognitive aspects of pain

Expectancy and acceptance are as much cognitive as emotional dimensions of pain. Trusting the doctor's ability to ease your suffering (whether this takes the form of a cure or merely the relief of pain and suffering) represents part of the *cognitive appraisal* aspect of pain – that is, the belief that the illness/symptoms are controllable. If we *attribute* our symptoms to something that's controllable, this should make us feel more optimistic (see Chapter 10). The *meaning* of our illness may be a crucial factor in how we react to it, which in turn may affect the illness itself.

Box 12.7 The meaning of illness

- According to Brody (1995), the patient's health is most likely to change in a positive direction when the *meaning of the illness* has been changed for the patient in a positive way.
- For example, when Mr Smith goes to the doctor with an experience that means to him 'I might have cancer', and he leaves with an experience that means 'I have a bad case of bronchitis and it should be better in a few days if I take these antibiotics', there's the greatest likelihood that he'll feel better and breathe more easily even before the antibiotics begin to take effect.
- Although 'meaning' is hard to define, one component is giving patients an explanation (attribution) for their illness that's both understandable and as reassuring as is truthfully possible.

Treating pain

A number of methods and techniques used in the treatment of stress (see page 210) are also used for treating (mainly chronic) pain. Bradley (1995) groups these behavioural treatments into three major kinds: contingency management, biofeedback and self-management/cognitive behaviour treatment.

Contingency management

This is a form of *behaviour modification* (see Chapter 45). Its goal is to achieve sufficient control over the patient's environment so that reinforcement is withdrawn from 'pain' behaviours and made contingent on 'well' behaviours. Relatives are trained to reinforce positively the display of healthy behaviour at home, and to ignore the display of pain behaviour.

Biofeedback

This involves giving patients information (via monitors or buzzers) about certain autonomic functions (such as blood pressure, heart rate and muscle tension), enabling them to bring these functions under voluntary control. Bradley (1995) cites a study in which college students suffering from muscle-contraction headaches were given seven 50-minute sessions, twice weekly, using feedback about muscle tension (electromyograph (EMG) biofeedback). They were also urged to practise their newly learned skills at home when free of headaches, and at the first signs of a headache. Compared with a waiting-list control condition (no treatment until the study was over) and a placebo condition (which engaged in 'pseudomeditation'), the EMG biofeedback produced significant reductions in EMG and headache activity.



Biofeedback

KEY STUDY 12.3 Giving birth the EMG way (Duchene, 1990)

- Duchene used EMG biofeedback to reduce the *acute* pain associated with childbirth among 40 first-time mothers.
- They were randomly assigned to the experimental or control group, the former attending six weekly training sessions, and being loaned biofeedback machines for practice at home. The feedback was provided through both sound and a visual monitor, based on the tension of the abdominal muscles, which the women focused on relaxing when they felt a pain or contraction.
- All the women were monitored for pain perception, starting at admission, and then at various points during labour, again at delivery and once more 24 hours after delivery (to recall the overall pain intensity).
- While 14 of the 20 control-group women requested and had epidurals for pain relief, only eight of the experimental group did so (a significant difference). The experimental group's labours were also significantly shorter.

Self-management/cognitive behaviour treatment

This is based on the premise that patients' expectations influence their emotional and behavioural reactions to life events. This makes it critical that doctors help patients to believe they can acquire the necessary skills for controlling pain and other forms of disability. Self-management interventions usually involve multiple treatments, such as learning coping skills, progressive muscle relaxation training, practice in communicating effectively with family members and health-care providers, and providing positive reinforcement for displaying coping behaviour. Patients are encouraged to take responsibility for managing their pain, and to attribute their success to their own efforts. (See the discussion of cognitive behaviour therapy for stress management, page 210.)

STRESS

What is it?

ASK YOURSELF...

- What do you understand by the term 'stress'?
- Is the term used in different ways to refer to different things or processes?
- What makes you feel stressed, and how does it feel?

According to Bartlett (1998):

> ... the notion that stress is bad for you and can make you ill has become a modern cultural truism. However, there is also a significant body of research evidence which lends support to this idea ... The study of stress must ... be central to ... health psychology which concerns, at its most basic level, the role of psychosocial processes in health and disease.

Definitions of stress fall into three categories (Bartlett, 1998; Goetsch & Fuller 1995):

1. stress as a *stimulus*
2. stress as a *response*
3. stress as *interaction* between an organism and its environment.

This classification corresponds very closely to the three models of stress identified by Cox (1978), as described below.

- The *engineering model* sees external stresses giving rise to a stress reaction, or strain, in the individual. The stress is located in the stimulus characteristics of the environment: stress is what happens to a person (not what happens within a person).

The concept is derived from Hooke's law of elasticity in physics, which deals with how loads (stress) produce deformation in metals. Up to a point, stress is inevitable and can be tolerated, and moderate levels may even be beneficial (*eustress*: Selye, 1956). Complete *absence* of stress (as measured, say, by anxiety or physiological arousal) could be positively *detrimental* (for example, you're so relaxed that you fail to notice the car speeding towards you as you're crossing the road). Stress helps to keep us alert, providing some of the energy required to maintain an interest in our environment, to explore it and adapt to it (see Chapter 9). However, when we're 'stretched beyond our limits of elasticity', it becomes positively harmful.

- The *physiological model* is primarily concerned with what happens *within* the person as a result of stress (the 'response' aspects of the engineering model), in particular the physiological changes.

The impetus for this view of stress was Selye's (1956) definition that 'Stress is the non-specific response of the body to any demand made upon it'. While a medical student, Selye noticed a general malaise or syndrome associated with 'being ill', regardless of the particular illness. The syndrome was characterised by: (i) a loss of appetite; (ii) an associated loss of weight and strength; (iii) loss of ambition; and (iv) a typical facial expression associated with illness.

Further examination of extreme cases revealed major physiological changes, (confirmed by Cox, 1978). This non-specific response to illness reflected a distinct phenomenon, which Selye called the *General Adaptation Syndrome* (GAS: see below, pages 204–206)

- The *transactional model* represents a kind of blend of the first two models. It sees stress as arising from an interaction between people and their environment – in particular, when there's an imbalance between the person's perception of the demands being made of

them by the situation, and their ability to meet those demands. Because it's the person's *perception* of this mismatch between demand and ability that causes stress, the model allows for important *individual differences* in what produces stress and how much stress is experienced. There are also wide differences in how people attempt to cope with stress, psychologically and behaviourally.

The *engineering model* is mainly concerned with the question 'What causes stress?', and the physiological model with the question 'What are the effects of stress?' The transactional model is concerned with both these questions, plus 'How do we cope with stress?'

What causes stress?

The causes of stress don't exist objectively, and individuals differ in what they see as a stressor in the first place (Lazarus, 1966). So, in this section we're really identifying *potential* stressors, the kinds of event or experience that most people are likely to find exceed their capacity to handle the demands that are involved.

Disruption of circadian rhythms

As we saw in Chapter 7, the word 'circadian' (meaning 'about one day') describes a particular periodicity or rhythm of a number of physiological and behavioural functions that can be seen in almost all living creatures. Many studies have shown that these rhythms persist if we suddenly reverse our activity pattern and sleep during the day and are active during the night. This indicates that these rhythms are internally controlled (*endogenous*).

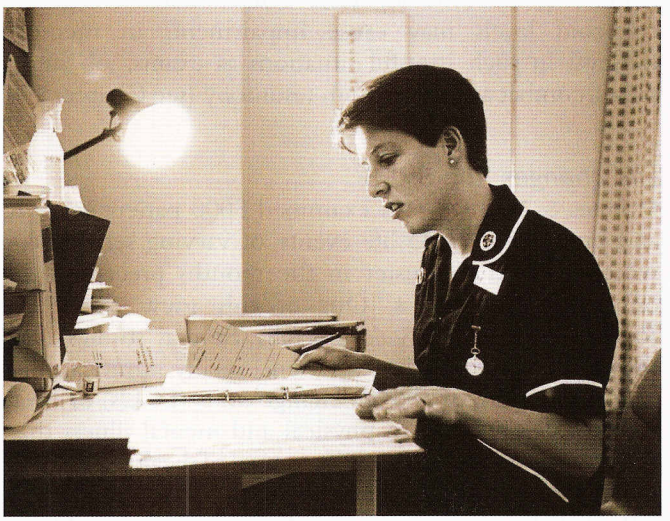
However, our circadian rhythms are kept on their once-every-24-hours schedule by regular daily environmental (*exogenous*) cues called *zeitgebers* (from the German meaning 'time givers'). The most important zeitgeber is the daily cycle of light and dark. If we persist with our reversal of sleep and activity, the body's circadian rhythms will (after a period of acclimatisation) reverse and become synchronised to the new set of exogenous cues.

Individual differences and the effects of shift work

ASK YOURSELF...
- Look back at Chapter 7.
- What is it about the disruption of circadian rhythms that could account for the effects of shift work and jet lag?

Some people take five to seven days to adjust, others take up to 14 days, and some may never achieve a complete reversal. But not all physiological functions reverse at the same time: body temperature usually reverses inside a week for most people, while the rhythms of adrenocortical hormone take much longer. During the changeover period, the body is in a state of *internal desynchronisation* (Aschoff, 1979). This is very stressful, and shift workers often report experiencing insomnia, digestive problems, irritability, fatigue, even depression, when changing work shifts. In shift work, the zeitgebers stay the same, but workers are forced to adjust their natural sleep–wake cycles in order to meet the demands of changing work schedules (Pinel, 1993).

KEY STUDY 12.4 Night nurses aren't all the same (Hawkins & Armstrong-Esther, 1978)
- Hawkins and Armstrong-Esther studied 11 nurses during the first seven nights of a period of night duty.
- They found that performance was significantly impaired on the first night, but improved progressively on successive nights. However, body temperature hadn't fully adjusted to night working after seven nights.
- There were significant differences between individual nurses, with some appearing relatively undisturbed by working nights, and others never really adjusting at all.



Night shift involves an enforced adjustment of sleep-wake cycles

Jet lag

Other occupational groups affected by disruption to their circadian rhythms are airline pilots and cabin crew, who experience jet lag because they cross time zones during the course of a flight. If you've ever travelled across a time zone, you'll know what it's like to have your biological rhythms 'out of sync' with your surroundings. If you arrive in Washington DC at, say, 7 pm (after an eight-hour flight from London) you may be ready to start your evening's entertainment, but as far as your body is concerned, it's time to sleep (back in London it's 1 am, the middle of the night).

Most people suffer much less jet lag when travelling in an east–west direction than a west–east direction. When going west ('chasing the sun'), the day is temporarily

lengthened. Because the natural circadian rhythm cycle is 25 hours (see Chapter 7), an increase in day length is much easier to deal with than a decrease. Secretion of *melatonin* reaches a peak during the night, helping to make us sleepy. After a long flight, the cyclical release of melatonin stays locked into the day/night pattern of the home country for some days. This could account for the fatigue felt during the day and the insomnia at night. If jet-lagged volunteers are given melatonin during the evening, far fewer report feeling jet-lagged than controls who receive only a placebo (Blakemore, 1988).

Cabin crew flying across time zones had significantly raised salivary *cortisol* (one of the *glucocorticoid* stress hormones: see Figure 12.4, page 205) compared with when the same cabin crew flew short distances, and with ground crew. In a response-time test, the jet-lagged crew performed more poorly when there was a 25-second delay between presentation of the target symbol and having to recognise the symbol (but not when the delay was only one or five seconds (Cho *et al.*, 2000). De Quervain *et al.* (2000) found poorer recognition memory among non-flight crew participants given *cortisone* (another glucocorticoid). They believe that raised glucocorticoid levels may cause impairments in memory retrieval in such stressful situations as exams, job interviews, combat and courtroom testimony (see Chapter 17).

Life changes: the SRRS

Holmes & Rahe (1967) examined 5000 patient records, and made a list of 43 life events, of varying seriousness, which seemed to cluster in the months preceding the onset of their illness. Out of this grew the *Social Readjustment Rating Scale* (SRRS). Several studies have shown that people who experience many significant life changes (a score of 300 life change units (LCUs) or over) are more susceptible to physical and mental illness than those with lower scores, The range of health problems include sudden cardiac death, heart attacks (non-fatal), TB, diabetes, leukaemia, accidents and even athletics injuries.

Evaluation of studies using the SRRS

- While many studies may have found statistically significant correlations between LCUs and subsequent illness, they're typically too low to be of any practical value (Lazarus, 1999).
- The studies that claim to show that life change is responsible for illness are *correlational*. It's possible, therefore, that instead of life events causing illness, some life events (e.g. being fired from work, sexual difficulties, trouble with in-laws, change in sleeping habits) are themselves early manifestations of an illness that is already developing (Brown, 1986; Davison *et al.*, 2004; Penny, 1996).
- Many of these studies are also *retrospective*. People are asked to recall both the illnesses and the stressful life

Rank	Life event	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of close friend	37
18	Change to different line of work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31
21	Foreclosure of mortgage or loan	30
22	Change in responsibilities at work	29
23	Son or daughter leaving home	29
24	Trouble with in-laws	29
25	Outstanding personal achievement	28
26	Wife begins or stops work	26
27	Begin or end school	26
28	Change in living conditions	25
29	Revision of personal habits	24
30	Trouble with boss	23
31	Change in work hours or conditions	20
32	Change in residence	20
33	Change in schools	20
34	Change in recreation	19
35	Change in church activities	19
36	Change in social activities	18
37	Mortgage or loan less than $10,000	17
38	Change in sleeping habits	16
39	Change in number of family get-togethers	15
40	Change in eating habits	15
41	Vacation	13
42	Christmas	12
43	Minor violations of the law	11

Table 12.1 Social Readjustment Rating Scale. The amount of life stress a person has experienced in a given period of time, say one year, is measured by the total number of life change units (LCUs). These units result from the addition of the values (shown in the right column) associated with events that the person has experienced during the target time period. The mean values (item weightings) were obtained empirically by telling 100 judges that 'marriage' had been assigned an arbitrary value of 500 and asking them to assign a number to each of the other events in terms of 'the intensity and length of time necessary to accommodate ... regardless of the desirability of the event relative to marriage'. The average of the numbers assigned each event was divided by 10 and the resulting values became the weighting of each life event (Reprinted from *Journal of Psychosomatic Research, 11*, Holmes & Rahe, 1967, The social readjustment rating scale, 213–218, © 1967, with permission from Elsevier)

events that occurred during the specified period, which is likely to produce distorted, unreliable data (see Chapter 17). For example, what people say about a past illness may be different from what the illness was actually like (Davison *et al.*, 2004).

Evaluation of the SRRS

- The SRRS assumes that *any* change, by definition, is stressful – that is, certain events are *inherently* stressful (stressful in themselves). But the *undesirable* aspects of events are at least as important as the fact that they change people's lives (Davison & Neale, 1994). A quick glance at Table 12.1 suggests that life changes have a largely *negative* feel about them (especially those in the top ten, which receive the highest LCU scores). So, the scale may be confusing 'change' and 'negativity'.
- Some of the items are *ambiguous* (e.g. those that refer to 'changes in ...' could be positive or negative changes). Others (e.g. 6 and 12) refer to states of health, so the total LCU score is already contaminated with an individual's current health status (Penny, 1996).
- The list of life events is incomplete. For example, there's no death of a child, no reference to the problems of old age, and no mention of natural or 'man-made' disasters (Lazarus, 1999).
- It fails to take individual circumstances into account. For example, the impact of the death of a spouse will be affected by the partners' age at the time, the nature of their relationship, and the cause of death (Forshaw, 2002).
- The SRRS was developed almost 40 years ago. This makes some of the original LCU scores associated with particular life events potentially out of date.
- Life changes may only be stressful if they're unexpected and, in this sense, uncontrollable. In other words, it may not be change as such that's stressful, but change we cannot prevent or reverse. Studies have shown that when people are asked to classify the undesirable life events on the SRRS as either 'controllable' or 'uncontrollable', only the latter are significantly correlated with subsequent onset of illness (Brown, 1986).

The need for control

According to Parkes (1993), the *psychosocial transitions* that are most dangerous to health are those that are sudden and allow little time for preparation. The sudden death of a relative from a heart attack, in an accident or as a result of crime are examples of the most stressful kind of life changes (see Chapter 39).

Using Rotter's (1966) *Locus of Control Scale*, and devising a new scale (the *Life Events Scale*), Johnson & Sarason (1978) found that life events stress was more closely related to psychiatric symptoms (in particular, depression and anxiety) among people rated as high on *external* locus of control, than among those rated as high on internal locus of control. In other words, people who believe that they don't have control over what happens to them are more vulnerable to the harmful effects of change than those who believe they do. This is related to Seligman's (1975) concept of *learned helplessness* (see Chapter 11).

The hassles and uplifts of everyday life

By definition, most of the 43 changes included in the SRRS aren't everyday occurrences. Kanner *et al.* (1981) designed a hassles scale (comprising 117 items), and an uplifts scale (135 items). Kanner *et al.* define hassles as:

> ... the irritating, frustrating, distressing demands that to some degree characterise everyday transactions with the environment. They include annoying practical problems, such as losing things or traffic jams and fortuitous occurrences such as inclement weather, as well as arguments, disappointments, and financial and family concerns.

Daily uplifts are:

> ... positive experiences such as the joy derived from manifestations of love, relief at hearing good news, the pleasure of a good night's rest, and so on.

In a study of 100 men and women aged 45–64 over a 12-month period, Kanner *et al.* confirmed the prediction that hassles were positively related to undesirable psychological symptoms. But the effect of uplifts was unclear, and research interest waned (Bartlett, 1998). They also found that hassles were a more powerful predictor of symptoms than life events (as measured by SRRS). 'Divorce', for example, may exert stress by any number of component hassles, such as cooking for oneself, handling money matters and having to tell people about it. So, daily hassles may intervene between major life events and health. It's the cumulative impact of these day-to-day problems that may prove detrimental to health.

Evaluation of the hassles and uplifts scales

According to Lazarus (1999), life events (as measured by the SSRS) are *distal* (remote) causes of stress. We need to know the psychological meaning a person attaches to an environmental event, the personal significance of what's happening (the *proximal* cause). This is what makes Kanner *et al.*'s scales a more valid approach. According to Lazarus (1999):

> Although daily hassles are far less dramatic than major life changes ... and what constitutes a hassle varies greatly from person to person, our research has suggested that, especially when they pile up or touch on special areas of *vulnerability* ... they can be very stressful for some people and very important for their subjective well-being and physical health ...

Bartlett (1998) claims that implicit in the concept of hassles is a stimulus-based definition of stress. This is inconsistent with the transactional approach advocated by Lazarus. This apparent contradiction stems from focusing on the hassles themselves, while simultaneously believing that it's their psychological meaning that causes stress.

Occupation-linked stressors

People working in the emergency services (police, fire, ambulance, emergency medical teams and mountain rescue) routinely encounter death, tragedy and horror. They're required to deal with people in pain and distress, and handle dead bodies. They may also face personal danger and injury.



High stress levels, an occupational hazard for those working in the emergency services

McLeod (2000) studied over 800 fire-fighters, giving them a number of standard measures of stress and coping, including the SRRS, Maslach & Jackson's (1981) *Burnout Scale*, and the *Impact of Event Scale* (Horowitz *et al.* 1979), a measure of post-traumatic stress disorder (PTSD) (see Chapter 44). McLeod found that individuals in different roles experience varying patterns of stress, and cope in different ways. For example, the highest overall stress levels were found among the day-duty fire-fighters, who live close to the station and are frequently on call. But sub-officers are the most likely to experience PTSD: they're typically first on the scene of an incident and are most intensely exposed to the suffering of fire and road traffic accident victims.

Box 12.8 Caring for others is bad for your health: nurses and stress

- In the case of nursing, intrinsic sources of stress (such as constantly having to deal with patients' pain, anxiety and death, as well as giving emotional support to patients' families) are made worse by the inadequate training received for handling such demands (Gaze, 1988).
- Those working in specialised areas or departments face additional demands. For example, nurses in intensive care units (ITUs) have to maintain high levels of concentration for long periods, are often emotionally drained by continuous close contact with a distressed and frightened family, and the process of dying may not follow a natural course: technology (such as ventilators) and drugs may prolong it (Fromant, 1988).
- Medical staff working in A&E (accident and emergency) departments are in the front line at times of major disasters, such as the 1989 Hillsborough disaster. However well prepared they may be practically, nothing can prepare them for the emotional demands placed upon them (Owen, 1990).

What are the effects of stress?

The general adaptation syndrome (GAS)

According to Selye (1956), GAS represents the body's defence against stress. The body responds in the same way to any stressor, whether it's environmental or arises from within the body itself. Selye initially observed that injecting extracts of ovarian tissue into rats produced enlargement of the adrenal glands, shrinkage of the thymus gland, and bleeding ulcers. When he used extracts of other organs (pituitary, kidney, spleen), as well as substances not derived from bodily tissue, the *same* responses were produced. He eventually found that this same 'triad' of 'non-specific' responses could be produced by such different stimuli as insulin, excessive cold or heat, X-rays, sleep and water deprivation, and electric shock. Selye (1956) defined stress as:

> ... the individual's psychophysiological response, mediated largely by the autonomic nervous system and the endocrine system, to any demands made on the individual ...

GAS comprises three stages: the *alarm reaction*, *resistance* and *exhaustion* (see Figure 12.5, page 206).

Alarm reaction

When a stimulus is perceived as a stressor, there's a brief, initial *shock phase*. Resistance to the stressor is lowered. But this is quickly followed by the *countershock* phase. The sympathetic branch of the ANS is activated, which, in turn, stimulates the *adrenal medulla* to secrete increased levels of adrenaline and noradrenaline (*catecholamines*).

These are associated with sympathetic changes, collectively referred to as the *fight or flight syndrome* (see Chapter 4). The catecholamines mimic sympathetic arousal ('*sympathomimetics*'), and noradrenaline is the transmitter at the synapses of the sympathetic branch of the ANS. Consequently, noradrenaline from the adrenals prolongs the action of noradrenaline released at synapses in the

ANS. This prolongs sympathetic arousal after the stressor's removal. This is referred to as the *ANS–adrenal–medulla system* (or *sympatho–adrenomedullary axis*).

Resistance

If the stressor isn't removed, there's a *decrease* in sympathetic activity, but an *increase* in output from the other part of the adrenal gland, the *adrenal cortex*. This is controlled by the amount of *adrenocorticotrophic hormone* (ACTH) in the blood. ACTH is released from the anterior pituitary (the 'master' endocrine gland) on instructions from the hypothalamus. The adrenal cortex is essential for the maintenance of life and its removal results in death.

The effect of ACTH is to stimulate the adrenal cortex to release *corticosteroids* (or *adrenocorticoid hormones*), one group of which is the *glucocorticoid hormones* (chiefly, corticosterone, cortisol and hydrocortisone). These control and conserve the amount of glucose in the blood (*glucogenesis*), which is to resist stress of all kinds. The glucocorticoids convert protein into glucose, make fats available for energy, increase blood flow and generally stimulate behavioural responsiveness. In this way, the *anterior pituitary–adrenal cortex*

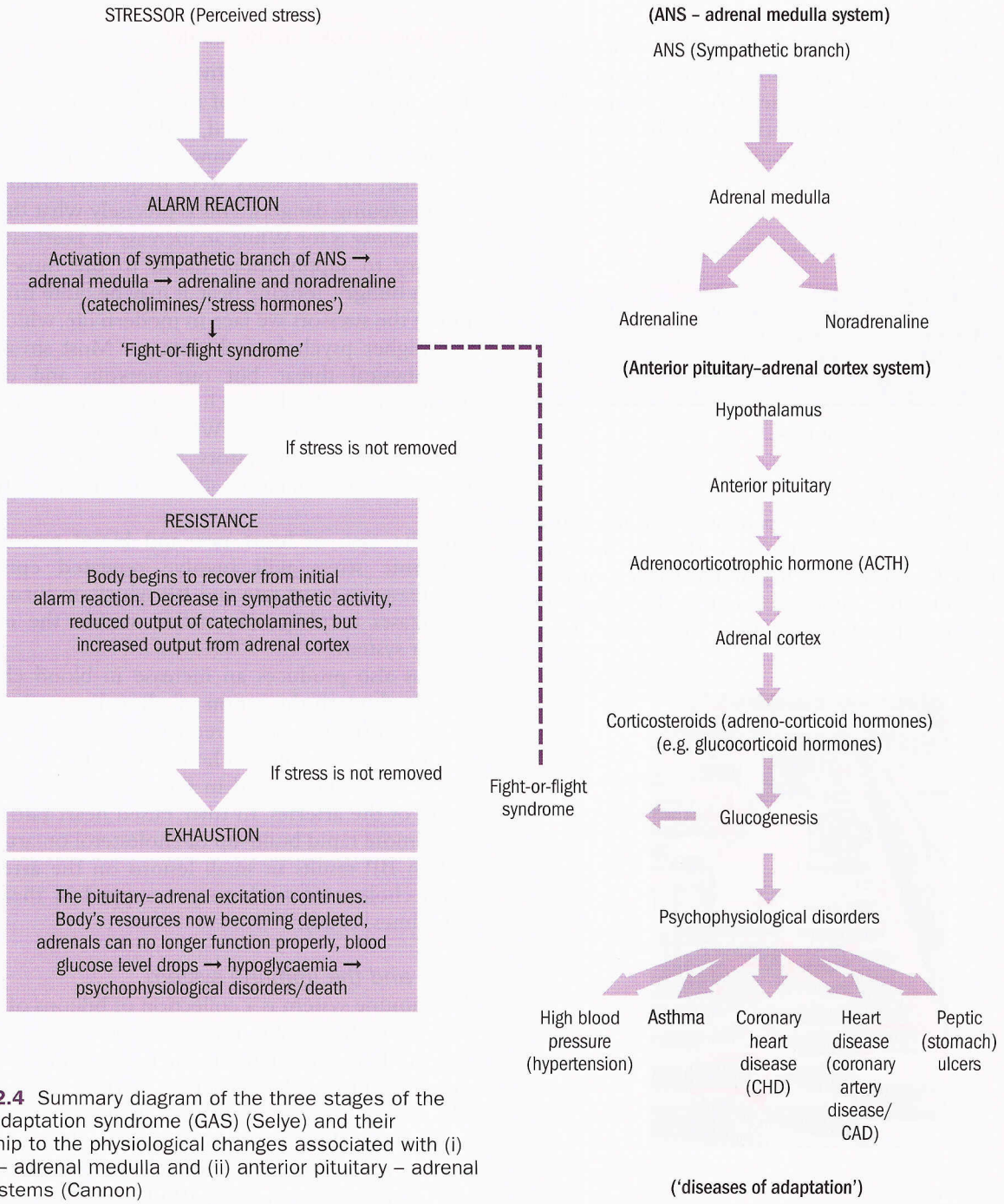


Figure 12.4 Summary diagram of the three stages of the general adaptation syndrome (GAS) (Selye) and their relationship to the physiological changes associated with (i) the ANS – adrenal medulla and (ii) anterior pituitary – adrenal cortex systems (Cannon)

system (or *hypothalamic–pituitary–adrenal axis*) contributes to the fight or flight syndrome.

Exhaustion

Once ACTH and corticosteroids are circulating in the bloodstream, they tend to inhibit the further release of ACTH from the pituitary. If the stressor is removed during the resistance stage, blood sugar levels will gradually return to normal. But when the stress situation continues, the pituitary–adrenal excitation will continue. The body's resources are now becoming depleted, the adrenals can no longer function properly, blood glucose levels drop and, in extreme cases, hypoglycaemia could result in death.

It's at this stage that *psychophysiological disorders* develop, including high blood pressure (hypertension), heart disease (coronary artery disease, CAD), coronary heart disease (CHD), asthma and peptic (stomach) ulcers. Selye called these the *diseases of adaptation*.

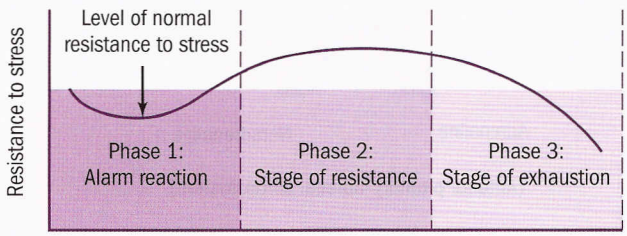
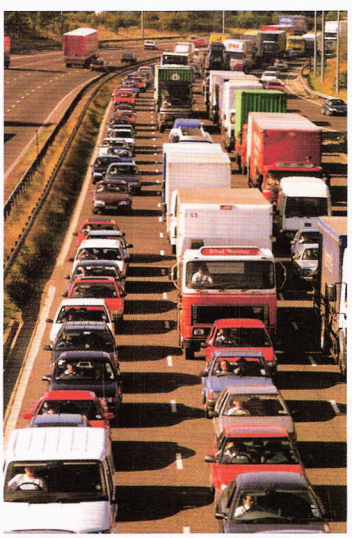


Figure 12.5 Three stages of GAS

Evaluation of GAS

Lazarus (1999) cites a study of patients dying from injury or disease. Postmortem examination showed that those who remained unconscious had normal levels of corticosteroids, while the opposite was true for those who were conscious (presumably aware they were dying).



A modern stressor

Lazarus infers from this that:

> ... some psychological awareness – akin to a conscious perception or appraisal – of the psychological significance of what is happening may be necessary to produce the adrenal cortical changes of the GAS.

While Selye helped us understand how stressors affect the body, in order to understand what makes a psychological event stressful, we must put the person into the equation. In effect, says Lazarus:

> ... it takes both the stressful stimulus conditions and a *vulnerable person* to generate a stress reaction ...

How does stress make us ill?

An evolutionary perspective

The sympathetic branch of the ANS responds as a unit, causing a state of generalised, undifferentiated arousal. This was probably of crucial importance in our evolutionary past, when our ancestors were frequently confronted by life-threatening dangers. This is precisely what the *fight-or-flight syndrome* is for. While an increase in heart rate may be necessary to supply more blood to the muscles when facing a hungry-looking bear, it may be quite irrelevant to most of the stressors we face in modern life, which involve a far higher psychological element. Most stressors *don't* pose physical threat, but our nervous and endocrine systems have evolved in such a way that we typically react to stressors as if they did. What may have been adaptive responses for our ancestors have become maladaptive today. So, what happens to all that internal activity?

- In the case of heart rate and blood pressure (BP), chronic stress will involve repeated episodes of increases in heart rate and BP which, in turn, produce increases in plaque formation within the cardiovascular system.
- Stress also produces an increase in blood cholesterol levels, through the action of adrenaline and noradrenaline on the release of free fatty acids. This produces a clumping-together of cholesterol particles, leading to clots in the blood and in the artery walls, and occlusion of the arteries. In turn, raised heart rate is related to a more rapid build-up of cholesterol on artery walls. High BP results in small lesions on the artery walls, and cholesterol tends to get trapped in these lesions (Holmes, 1994).

Stress and the immune system

The immune system is a collection of billions of cells that travel through the bloodstream and move in and out of tissues and organs, defending the body against invasion by foreign agents (such as bacteria, viruses and cancerous cells). These cells are produced mainly in the spleen, lymph nodes, thymus and bone marrow. The study of the effect of psychological factors on the immune system is called *psychoneuroimmunology* (PNI).

People often catch a cold soon after a period of stress (such as final exams), because stress seems to reduce the immune system's ability to fight off cold viruses. Goetsch & Fuller (1995) refer to studies that show decreases in the activity of *lymphocytes* among medical students during their final exams. Lymphocytes ('natural killer cells') are a particular type of white blood cell that normally fight off viruses and cancer cells. Levels of immunoglobulin A (IgA) increase immediately after an oral exam (if it appeared to go well), but *not* after written exams (suggesting that the stress isn't relieved until much later – when the results come out!) (Petit-Zeman, 2000).

Women with breast cancer who visualise their white blood cells waging war against the cancer cells, are boosting their immune system in a way that could help them fight the disease. This guided imagery was combined with progressive muscle relaxation, as well as standard surgery, chemotherapy and radiotherapy. Compared with women in a control group (given only the medical treatment), those who used the psychological techniques had higher numbers of mature T-cells, activated T-cells and cells carrying T-cell receptors (see Figure 12.6 below). These are important for attacking malignant cells. At the end of the nine-month study, these women also had higher levels of lymphokines (activated killer cells), which help prevent the disease from spreading. The women reported a better quality of life and fewer side-effects from medical treatments (Norton,

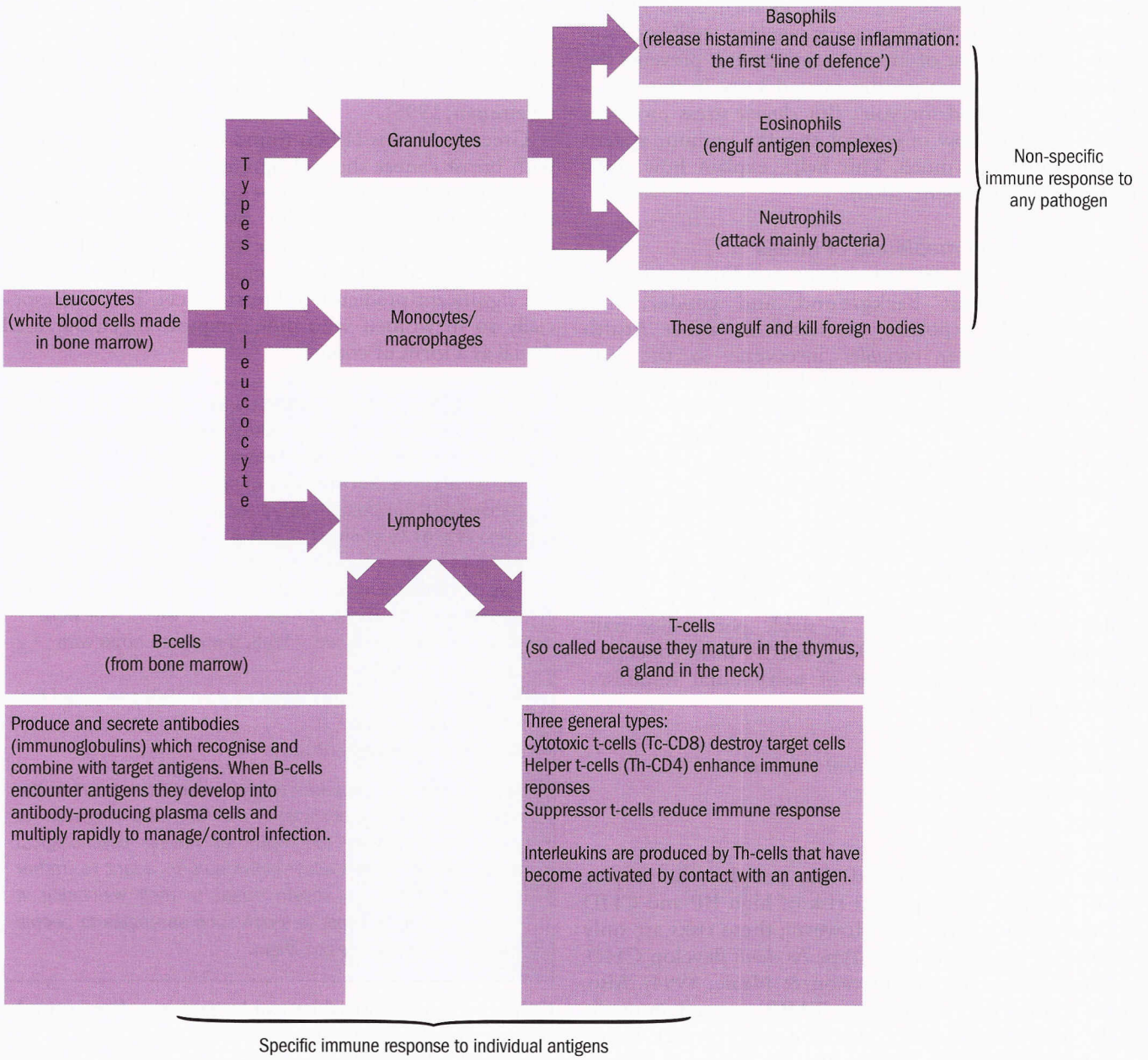


Figure 12.6 The immune system (adapted from Hayward, 1998)

2000a). While the immune system is so vital, Sternberg & Gold (1997) warn that:

> ... its responses are so powerful that they require constant regulation to ensure that they are neither excessive nor indiscriminate and yet remain effective. When the immune system escapes regulation, autoimmune and inflammatory diseases or immune deficiency syndromes result.

As we've seen, the GAS involves the release of cortisol (one of the major glucocorticoids) into the bloodstream. But the immune system, too, is capable of triggering this stream of biological events: it has a direct line to the hypothalamus. When our immune system is activated to fight an illness or infection, it sends a signal to the hypothalamus to produce its stress hormones (including cortisol). The flow of hormones, in turn, *shuts off* the immune response. This ingenious negative feedback loop allows a short burst of immune activity, but prevents the immune system from getting carried away. In this way, a little stress is 'good for you'. But *chronic* stress produces such a constant flow of cortisol, that the immune system is dampened too much. This helps explain how stress makes us ill (Sternberg, 2000).

Moderators and mediators of stress

Moderator variables are antecedent conditions (such as personality, ethnic background, and gender) that interact with exposure to stress to affect health outcome. *Mediator variables* intervene in the link between stress exposure and health outcome (for example, appraisal: Folkman & Lazarus, 1988b). If they *reduce* the impact of a stressful event, they're called 'protective' or 'buffering' variables (they soften or cushion the impact: Bartlett, 1998).

Personality

There's been an enormous amount of research into the *Type A Behaviour Pattern* (TABP). This was originally called 'Type A personality' (a stable personality trait: Friedman & Rosenman, 1974), but it's now conceptualised as a stereotypical set of behavioural responses. Typical responses are:

- *competitiveness* and *achievement orientation*
- *aggressiveness* and *hostility*
- *sense of time urgency*.

Many early studies showed that people who display TABP were at much greater risk of high BP and CHD compared with 'Type Bs'. However, these risks are only *relative*: the vast majority of Type As *don't* develop CHD, and many Type Bs do (Davison & Neale, 1994). Also, most studies have found that TABP assessed immediately following a heart attack *doesn't* predict future attacks. This suggests that TAPB *isn't* a distinct risk for CHD in those already at risk of the disorder (Penny, 1996).

Research is increasingly pointing towards *hostility* as the best single predictor of CHD. This is the non-specific dislike of others, the tendency to see the worst in others, anger and envy, and a lack of compassion. The behavioural aspect involves aggressiveness and possible bullying (Forshaw, 2002). In fact, hostility is a better predictor than the TAPB as a whole. Dembroski & Costa (1987) argue that 'potential for hostility' is a reasonably stable personality trait.

According to Temoshok (1987), *Type C personalities* are cancer-prone. The Type C personality has difficulty expressing emotion and tends to suppress or inhibit emotions, particularly negative ones such as anger. While there's no clear-cut evidence that these personality characteristics can actually cause cancer, it does seem likely that they influence the progression of cancer and, hence, the survival time of cancer patients (Weinman, 1995).

Greer & Morris (1975) found that women diagnosed with breast cancer showed significantly more emotional suppression than those with benign breast disease (especially among those under 50). This had been a characteristic for most of their lives. Cooper & Faragher (1993) reported that experiencing a major stressful event is a significant predictor of breast cancer. This was especially so in women who didn't express anger, but used denial as a form of coping.

KEY STUDY 12.5 Beating breast cancer (Greer *et al.*, 1979)

- Greer *et al.* studied women who'd had a mastectomy after being diagnosed with breast cancer.
- Those who reacted either by *denying* what had happened ('I'm being treated for a lump, but it's not serious'), or by showing '*fighting spirit*' ('This is not going to beat me'), were significantly more likely to be free of cancer five years later than women who stoically accepted it ('I feel an illness is God's will ...') or were described as 'giving up' ('Well, there's no hope with cancer, is there?').
- A follow-up at 15 years (Greer *et al.*, 1990) confirmed the improved prognosis.
- According to Hegarty (2000):

  Such research ... appears to give scientific support to the advice ... 'to think positive' in the face of a diagnosis of cancer. It suggests the value of having psychological resources which will allow individuals to adapt to, rather than succumb to, a severe threat to their well-being. It might even be possible to teach such strategies to people who neither have nor use them.

Other personality variables can be *protective*. For example, Kobasa and her colleagues (1979; Kobasa *et al.*, 1982) describe *hardiness*, which comprises the three Cs:

- *commitment* – a tendency to involve oneself in whatever one is doing, and to approach life with a sense of curiosity and meaningfulness
- *control* – this is related to Rotter's locus of control (see above, page 203)
- *challenge* – a tendency to believe that change, as opposed to stability, is normal in life, and to anticipate change as an incentive to personal growth and development rather than a threat to security.

According to Funk (1992), hardiness seems to moderate the stress–illness relationship by reducing cognitive appraisals of threat, and reducing the use of regressive coping (see Table 12.2, page 210).

Cultural/ethnic background

In evaluating the TABP research, Penny (1996) observes that western culture seems to encourage and value it. Competitiveness and striving for achievement are common goals in capitalist societies, but probably not in more traditional, communal ones. Similarly, the SRRS has been criticised for not taking account of cultural and ethnic differences in the kinds of potential stressors that people are exposed to.

For many years, it's been noted that both the physical and mental health of African-Americans is worse than that of whites, especially in terms of the spread of AIDS and hypertension. While this is partly due to the direct negative effects of poverty, such as poor diet, low levels of education and poor medical care, there are many psychological and social stressors involved as well. Although these are extremely difficult to measure, especially across cultures:

> ... there is little dispute that blacks in North America and Europe face a unique kind of stress – racial discrimination. (Cooper *et al.*, 1999)

ASK YOURSELF...

- Can you think of ways in which sexism might adversely affect women's health?
- Do women have access to protective factors that men don't?

How do we cope with stress?

Primary appraisal of an event as in some way harmful or threatening is really only the beginning of the stress process, not the end. In *secondary appraisal*, we consider what can be done about the stressful situation, by evaluating our *coping options* (Lazarus, 1966, 1999). Primary appraisal doesn't necessarily come first. The difference between them is *not* timing, but *content*. They are interdependent aspects of a common process. According to Lazarus (1999):

> The more confident we are of our capacity to overcome obstacles and dangers, the more likely we are to be challenged rather than threatened and vice versa, a sense of inadequacy promotes threat ...

Cohen & Lazarus (1979) have classified all the coping strategies that a person might use into five general categories:

1. *direct action response* – the individual tries directly to change or manipulate his/her relationship to the stressful situation, such as escaping from/removing it
2. *information seeking* – the individual tries to understand the situation better, and to predict future events that are related to the stressor
3. *inhibition of action* – doing nothing; this may be the best course of action if the situation is seen as short term
4. *intrapsychic or palliative coping* – the individual reappraises the situation (for example, through the use of psychological defence mechanisms) or changes the 'internal environment' (through drugs, alcohol, relaxation or meditation)
5. turning to others for help and emotional support.

These five categories of coping overlap with the distinction between problem-focused and emotion-focused coping.

Box 12.9 Problem-focused and emotion-focused coping (Lazarus & Folkman, 1984)

- Problem-focused coping involves taking direct action in order to solve the problem, or seeking information that's relevant to a solution.
- *Emotion-focused coping* involves trying to reduce the negative emotions that are part of the experience of stress.
- Lazarus and Folkman argue that effective coping depends on the situation, and sometimes using *both* kinds might offer the 'best solution'.

In the *transactional model* (Cox, 1978: see above, page 200), the 'stress response' refers to both psychological and physiological means of coping. In turn, the psychological response has two components, *cognitive defence* and *behavioural response*, and the consequences of both (perceived and actual) are continuously being appraised in relation to the stressful situation.

ASK YOURSELF...

- Which of the above coping responses best describes your typical response to stressful situations?
- How about your best friend or partner?
- Does the way you cope depend on the nature of the stressor?

Coping and defence mechanisms

Sometimes the term 'coping response' or mechanism is used in contrast to 'defence mechanism' (e.g. Grasha, 1983; Savickas, 1995). The *ego defence mechanisms* involve

some degree of distortion of reality and self-deception (see Chapter 42). While desirable in the short term, as long-term solutions to stress they're unhealthy and undesirable. *Coping mechanisms*, by contrast, are conscious attempts to adapt to stress and anxiety in a positive and constructive way. They use thoughts and behaviours to search for information, problem-solving, seeking help from others, recognising our true feelings, and establishing goals and objectives:

> ... In effect, coping improves fit [between the individual and the environment], whereas defence maintains misfit while reducing perceived stress (Savickas, 1995).

Table 12.2 Some major coping mechanisms and their corresponding defence mechanisms (based on Grasha, 1983)

Coping mechanism	Description	Corresponding defence
Objectivity	Separating one thought from another or our feelings from our thoughts. Allows us to obtain a better understanding of how we think/feel, and an objective evaluation of our actions	Isolation
Logical analysis	Systematically analysing our problems, in order to find explanations and make plans to solve them, based on the realities of the situation	Rationalisation
Concentration	Ability to set aside disturbing thoughts/ feelings, in order to concentrate on the task in hand	Denial
Playfulness	Ability to use past feelings/ ideas/behaviour appropriately to enrich the solution of problems/add enjoyment to life	Regression
Tolerance of ambiguity	Ability to function in situations where we/others cannot make clear choices, because the situation's so complicated	
Suppression	Ability consciously to forget about/hold back thoughts/ feelings, until an appropriate time/place	Repression

Sublimation can be thought of as a coping mechanism and a defence mechanism. It involves channelling anxiety in socially desirable ways, and so is positive and constructive, as well as being a defence against anxiety.

Stress management

Much of what we've said about coping with stress refers to what people do in a largely *spontaneous* way. In this informal sense, we all 'manage our stress' more or less effectively. But, more formally, *stress management* refers to a range of psychological techniques used in a quite deliberate way, in a professional setting, to help people reduce their stress. These techniques may be used singly or in combination.

- In the case of *biofeedback* (discussed above in relation to pain control: see page 199), the focus is on treating the symptoms of stress rather than the stressor itself.
- The same is true for a number of procedures used to bring about a state of relaxation, in particular *progressive muscle relaxation*, meditation and hypnosis.
- *Cognitive restructuring* refers to a number of specific methods aimed at trying to change the way individuals think about their life situation and self, in order to change their emotional responses and behaviour. This approach is based largely on the work of Beck *(the treatment of automatic thoughts)* and Ellis *(rational emotive therapy)*, two major forms of *cognitive behaviour therapy* (see Chapter 45). This approach provides information to reduce uncertainty and to enhance people's sense of control.

CHAPTER SUMMARY

- While traditional medicine is based on the **biomedical model** of disease, health psychology, psychosomatic medicine and behavioural medicine all rest on the **biopsychosocial model**.
- Changes in major causes of death during the twentieth century in industrialised societies reflect changes in lifestyle. This is incompatible with the biomedical model.
- **Health psychology** focuses on normal behaviour and psychological processes in relation to health and illness, although some psychologists see it as an extension of clinical psychology. It also attempts to **promote** health behaviour and **prevent** illness.
- **Health** is more than just the absence of **disease**, which is defined in **biological/somatic** terms. By contrast, **illness** is a more **psychological** concept.
- According to **cross-cultural health psychology**, both health and disease are cultural concepts. Cultural factors contribute to the prevalence of certain diseases between cultures, and **acculturation** may expose immigrants to risk factors within the host culture.
- **Expectancy-value models** try to account for people's adoption/failure to adopt particular health behaviours. They are **rational reasoning** models.
- In the **health belief model** (**HBM**), belief in **susceptibility** to, and perception of **severity of the consequences**, of the disease, together determine the **perceived threat**.

- A factor that may explain the persistence of unhealthy behaviours is people's tendency towards **unrealistic optimism**. This suggests that perception of one's own risk *isn't* a rational process.
- The **theory of reasoned action** (**TRA**) assumes that behaviour is a function of behavioural intention, jointly determined by a person's **attitude** and **subjective norms**.
- The **theory of planned behaviour** (**TPB**) is a modification of the TRA. The extra ingredient is perceived **behavioural control**, based on Bandura's concept of **self-efficacy**.
- All the models are poor predictors of actual behaviour (the **intention–behaviour gap**). One response to this criticism is the concept of **implementation intentions**.
- The ability of the models to predict **safe sex** is limited. Overall, findings from studies involving gay samples based on the TRA/TPB are less consistent than those involving heterosexuals. In both groups, **negotiation with partners** over condom use helps predict their actual use, and perception of **personal invulnerability** is commonplace.
- **Aerobic exercise** helps decrease the risk of several life-threatening diseases, as well as increasing positive mental health. But even short exercise sessions can be beneficial.
- Research indicates that **patient non-compliance/non-adherence** is very common, although this varies depending on the particular disorder. It applies to both chronic and acute conditions, and to organ transplant patients. The **double high/double efficacy/behavioural intention model** identifies the five factors that make compliance most likely.
- Compliance is affected by both **practitioner** and **patient/regimen variables**. The former include how doctors **communicate** their beliefs to patients, and the latter include patients' **satisfaction** with the consultation, and their **understanding/recall** of the information given.
- Although **pain** is basically physiological, the pain **experience** has **emotional**, **cognitive** and **cultural** components. **Phantom limb pain** illustrates that people can feel pain in the absence of physical injury, and **congenital analgesia** illustrates the converse.
- **Treatment** of pain includes methods used to treat stress, such as **contingency management**, **EMG biofeedback** and **self-management/cognitive behaviour treatment**.
- **Stress** can be conceptualised as a **stimulus** (corresponding to the **engineering model**), a **response** (corresponding to the **physiological model**) or as an **interaction** between organism and environment (corresponding to the **transactional model**).
- The **causes** of stress include **disruption of circadian rhythms**, as in shift work and jet lag, and **occupation-linked stressors**, especially for those involved in the emergency services and health care.
- Major **life changes** have been studied using the **Social Readjustment Rating Scale** (**SRRS**). Research claiming that high scores are related to a range of health problems has been criticised on methodological grounds, as has the SRRS itself. An alternative to the SRRS is the **hassles scale**.
- Selye's **General Adaptation Syndrome** (**GAS**) represents the body's defence against stress. It comprises the **alarm reaction**, **resistance** and **exhaustion**.
- The alarm reaction involves the **fight-or-flight response**, in which the **ANS–adrenal–medulla system** is activated. In resistance, the **anterior pituitary–adrenal cortex system** is activated.
- While the fight-or-flight response may have been adaptive in our evolutionary past, it's inappropriate as a response to most 'modern' stressors. Stress can cause illness through maintaining a dangerously high level of physiological arousal.
- **Psychoneuroimmunology** studies the relationship between stress and health by assessing its effects on the **immune system**. Just as stress can make us ill by reducing the immune system's ability to fight infection, so psychological factors can enhance immune system functioning, as in fighting breast cancer.
- **Moderators** of stress include **personality** and **ethnic background**. Considerable research has investigated the link between **Type A Behaviour Pattern** (**TABP**) and coronary heart disease, and between **Type C personalities** and cancer. Unlike these, **hardiness** is a **protective** factor against the harmful effects of stress.
- **Coping** with stress involves **primary** and **secondary appraisals**, **problem-focused** and **emotion-focused** coping, and **coping mechanisms** (as distinct from **defence mechanisms**). **Stress management** involves **biofeedback**, **progressive muscle relaxation** and **cognitive restructuring**.

Links with other topics/chapters

- The biomedical model of illness is closely related to the *disease model of addiction* (Chapter 8) and the *medical model of mental disorder* (Chapter 43).
- Health psychology is closely related to *clinical psychology* (Chapter 1), although the exact relationship is controversial.
- *Culture* determines what is commonly understood by 'health' and 'illness', as well as helping to determine the prevalence of certain diseases. Pain may also be understood as a cultural phenomenon (Chapter 47).
- Models of health behaviour are culturally relative, and western culture seems to value and encourage the component response of TAPB (Chapter 47).

- *Racial discrimination* is a unique form of stress that can account for the greater susceptibility of African-Americans to certain health problems (Chapter 25).
- The TRA has been central to the debate within social psychology regarding the *relationship between attitudes and behaviour* (Chapter 24).
- The TPB is a modification of the TRA, reflecting the influence of Bandura's concept of *self-efficacy* (Chapter 35).
- Perceptions of invulnerability demonstrate how people rationalise behaviour that conflicts with aspects of their self-concept, as explained by Festinger's *cognitive dissonance theory* (Chapter 24).
- The effects of exercise on mood and cognition are part of *sport psychology* (Chapter 31).
- Patient 'compliance' implies the doctor's role as an authority figure, with the less powerful patient in a submissive (obedient) role (Chapter 27).
- Biofeedback is used in the treatment of pain and stress-related disorders, and is derived from work with rats, which demonstrated how autonomic responses could be modified using *operant conditioning* techniques (Chapter 11).
- Contingency management of pain is a form of *behaviour modification* (Chapters 11 and 45).
- Both pain and stress are also treated through cognitive behavioural techniques, including Beck's *treatment of automatic thoughts* and Ellis's *rational emotive therapy* (Chapters 44 and 45).
- The disruption of circadian rhythms is a major cause of *stress* (Chapter 7).
- People working in the emergency services are especially susceptible to *post-traumatic stress disorder* (PTSD) (Chapter 44).
- Stressors adversely affect health through their impact on the *autonomic nervous system* (ANS) and *endocrine system* (Chapter 4).
- For something to be perceived as a stressor, it first has to be appraised as potentially threatening. This also applies to *theories of emotion* (Chapter 10).
- Coping mechanisms are often contrasted with Freud's account of *defence mechanisms* (Chapter 42).

THREE

COGNITIVE PSYCHOLOGY

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What is attention?

Methods of studying attention

- Selective attention
- Divided attention

Selective (or focused) auditory attention

- Cherry's dichotic listening and shadowing research
- Broadbent's split-span studies

Single-channel theories of focused auditory attention

- Broadbent's early selection filter theory
  - *Tests of Broadbent's theory*
  - *An evaluation of Broadbent's theory*
- Treisman's attenuation (or stimulus-analysis system) model
- The Deutsch–Norman late-selection filter model
  - *Tests of the Treisman and the Deutsch–Norman models*
- An evaluation of single-channel models

Focused visual attention

- The internal mental spotlight and the zoom lens
  - *An evaluation of the spotlight model*
- The fate of unattended visual stimuli
- Treisman's feature-integration theory
  - *An evaluation of Treisman's theory*
- Visual attention and brain damage

Divided attention

- Some demonstrations of dual-task performance
- Factors affecting dual-task performance
- Theories of divided attention
  - *Limited-capacity theories*
  - *Norman and Bobrow's theory*
  - *Multi-channel theories*
- Automatic vs controlled processing
  - *Schneider and Shiffrin's automaticity model*
  - *Norman and Shallice's SAS model*
- Action slips
  - *Explaining action slips*

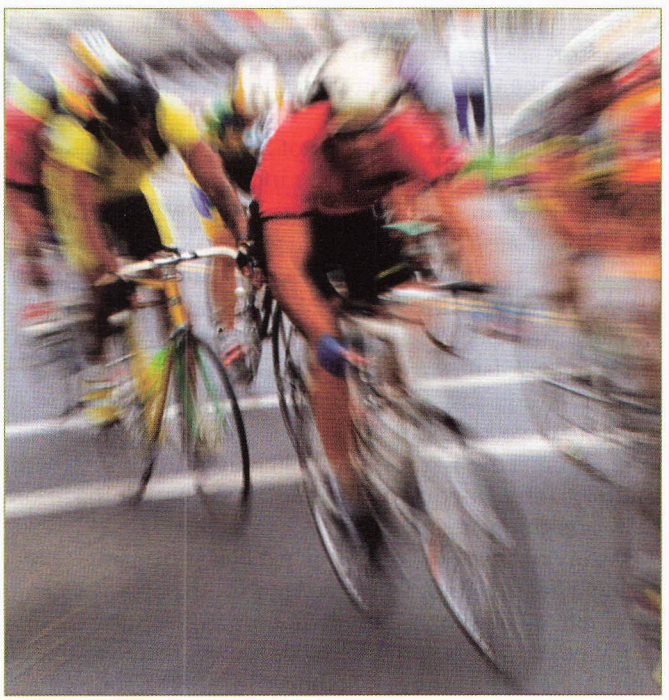
Conclusions

Chapter summary

Links with other topics/chapters

13

ATTENTION AND PERFORMANCE



INTRODUCTION AND OVERVIEW

According to Titchener (1903), a student of Wundt: 'The doctrine of attention is the nerve of the whole psychological system'.

However, the Gestalt psychologists believed the concept of attention was unnecessary (they believed that a stimulus array's properties were sufficient to predict the perceptual response to it: see Chapter 15). The behaviourists argued that since 'attention' was unobservable, it wasn't worthy of experimental study (see Chapters 2 and 3).

Interest in the study of attention re-emerged following the publication of Broadbent's (1958) *Perception and Communication*, which also had a great impact on the development of cognitive psychology overall. Broadbent argued that the world is composed of many more sensations than can be handled by the perceptual and cognitive capabilities of the human observer. To cope with the flood of available information, humans must selectively attend to only some information, and somehow 'tune out' the rest. Attention, therefore, is the result of a limited-capacity information-processing system. Solso (1995) calls this a 'pipeline' theory. To understand our ability to attend selectively to things, researchers study focused (or selective) attention.

Central to the information-processing approach is the computer analogy. This is arguably most evident in explanations of memory (see Chapter 17) and attention. Concepts such as buffer store and limited-capacity processor are drawn from information technology and built into the models of attention that we'll discuss in this chapter.

Almost all the early models of attention assumed *serial processing*, a step-by-step process in which each operation is carried out in turn. The first of these was Broadbent's (1958) *filter model*, followed by Treisman's (1964) *attenuation model*, and the *pertinence model* (Deutsch & Deutsch, 1963; Norman, 1969). These are all 'single-channel models' of selective attention. But early attempts to explain *divided attention*, such as Kahneman's (1973) *central capacity theory*, also assumed serial processing. In *parallel processing*, two or more operations are carried out at the same time. This is the view taken in Allport's (1980b) multi-channel theory of divided attention (doing more than one thing at a time).

Assumptions about serial or parallel processing reflect changes in the underlying computer analogy, which in turn reflect developments in computer technology. For much of the 1950s and 1960s, computers were capable of only serial processing. During the 1980s and 1990s, machines capable of massive parallel processing started to be built, and theorists have returned to an earlier belief that cognitive theories should be based more closely on the brain's neural networks (Eysenck & Keane, 1995; Jarvis, 1994; see Chapter 20). The human brain is the parallel processing machine *par excellence* (see Chapter 4).

WHAT IS ATTENTION?

ASK YOURSELF...

- What do you understand by the term 'attention'? (See Chapters 7 and 9.)

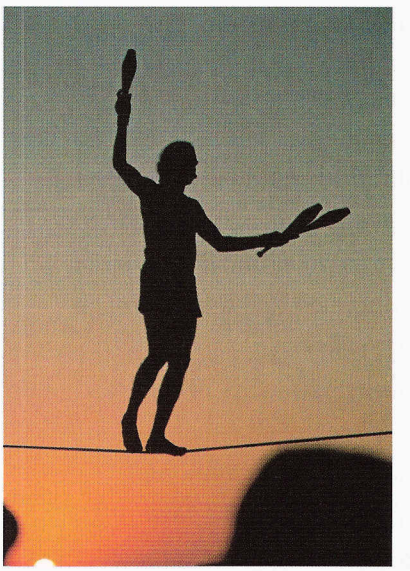
One famous definition of attention is that of William James (1890), according to whom:

> It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalisation, concentration of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others.

Although we cannot necessarily equate attention with consciousness (see below), James's definition underlines the selective nature of attention. This is echoed in Solso's (1995) definition: 'the concentration of mental effort on sensory or mental events'. However, this is only one of two major ways in which attention has been defined and investigated. A crucial distinction is made between:

1. the mechanisms by which certain information is registered and other information is rejected, whether or not the latter enters conscious awareness (selective or *focused attention*)
2. some upper limit to the amount of processing that can be performed on incoming information at any one time (*capacity* or *divided attention*).

As we saw in Chapters 7 and 9, the term 'attention' has also been used to refer to arousal level, vigilance, and the ability to stay alert and concentrate.



How many things can *you* do at once?

METHODS OF STUDYING ATTENTION

Selective attention

People are presented with two or more simultaneous 'messages', and are instructed to process and respond to only one of them. The most popular way of doing this is to use *shadowing*, in which one message is fed into the left ear and a different message into the right ear (through headphones). Participants have to repeat one of these messages aloud as they hear it.

The shadowing technique is really a particular form of *dichotic listening* (Broadbent, 1954). This is the simultaneous

reception of two different stimulus inputs, one to each ear. Shadowing was first used by Cherry (1953), who wanted to study the *cocktail party phenomenon*, in which we manage to select one or two voices to listen to from the hubbub of conversations taking place at the same time and in the same room. The participant is asked to *select*, which can tell us something about the selection process and what happens to unattended stimuli. Most studies have looked at auditory attention.



The cocktail party phenomenon

Divided attention

In the *dual-task technique*, people are asked to attend and respond to both (or all) the messages. Whereas shadowing focuses attention on a particular message, the dual-task method deliberately *divides* people's attention. This provides useful information about a person's processing limitations, and also about attention mechanisms and their capacity.

SELECTIVE (OR FOCUSED) AUDITORY ATTENTION

Cherry's dichotic listening and shadowing research

In his initial experiments, Cherry's participants wore headphones through which pairs of spoken prose 'messages' were presented to both ears simultaneously (*binaural listening*). Cherry found that various physical differences affected a person's ability to select one of the messages to attend to, in particular voice intensity, the speaker's location, and the speaker's sex. He also found that when these differences were controlled for in the two messages (so that each message was, say, spoken in an equally intense female voice), their meaning was extremely difficult to separate. In later experiments, he used dichotic listening and shadowing. While participants were able to shadow the specified message, little of the non-shadowed message was remembered.

Box 13.1 Other research findings using shadowing

- Little of the non-shadowed message was remembered, even when the same word was presented 35 times to the non-shadowed ear (Moray, 1959).
- Also, participants didn't notice if the message was spoken in a foreign language or changed from English to a different language.
- While speech played backwards was reported as having 'something queer about it', most participants believed it to be normal speech.
- However, a pure tone of 400 cycles per second was nearly always noticed, as was a change of voice from male to female or female to male (Cherry & Taylor, 1954).

ASK YOURSELF...

- What conclusions can you draw from these findings?

These data suggested that while the *physical* properties of the message in the non-shadowed ear were 'heard', *semantic content* (its *meaning*) was completely lost.

Researchers quickly moved on from Cherry's original question about how we can attend to one conversation, and began to ask why so little seemed to be remembered about the other conversations (Hampson & Morris, 1996).

Broadbent's split-span studies

Broadbent (1954) reported the results of a series of studies using the *split-span procedure*. In this, three digits (such as 8, 2 and 1) are presented via headphones to one ear at the rate of one every half a second. Simultaneously, three different digits (such as 7, 3 and 4) are presented to the other ear. The task is to listen to the two sets of numbers and then write down as much as can be remembered.

The digits can be recalled either:

1. according to the ear of presentation (*ear-by-ear recall*: the numbers above could be recalled as either 8, 2, 1, 7, 3, 4 or 7, 3, 4, 8, 2, 1), or
2. according to their chronological order of presentation (*pair-by-pair recall*); since the digits have been presented in pairs, this would involve recalling the first pair (8, 7 or 7, 8), followed by the second pair (2, 3 or 3, 2) and finally the third pair (1, 4 or 4, 1).

When people are simply given a list of six digits at a rate of one every half a second, serial recall is typically 95 per cent accurate. However, Broadbent found that the split-span procedure produced accurate recall only 65 per cent of the time. Moreover, pair-by-pair recall was considerably poorer than ear-by-ear recall. If given a choice, people preferred ear-by-ear recall.

SINGLE-CHANNEL THEORIES OF FOCUSED AUDITORY ATTENTION

Single-channel theories propose that somewhere in information processing there's a 'bottleneck' or filter that allows some information to be passed on for further analysis, while the other information is either discarded or processed to only a limited degree. The three theories that have been proposed differ mainly over whether the filtering takes place early or late in information processing. This means that they differ in terms of the nature and extent of processing of the non-attended material.

Broadbent's early selection filter theory

Broadbent's (1958) theory was the first systematic attempt to explain both Cherry's findings and those of split-span experiments. Broadbent assumes that our ability to process information is *capacity-limited*. Information from the senses passes 'in parallel' to a short-term store. This is a temporary 'buffer system' which holds information until it can be processed further and, effectively, extends the duration of a stimulus (see Chapter 17). The various types of information (such as two or more voices) are preserved in their original form, and then passed to a selective filter. This operates on the basis of the information's physical characteristics, selecting one source for further analysis and rejecting all others.

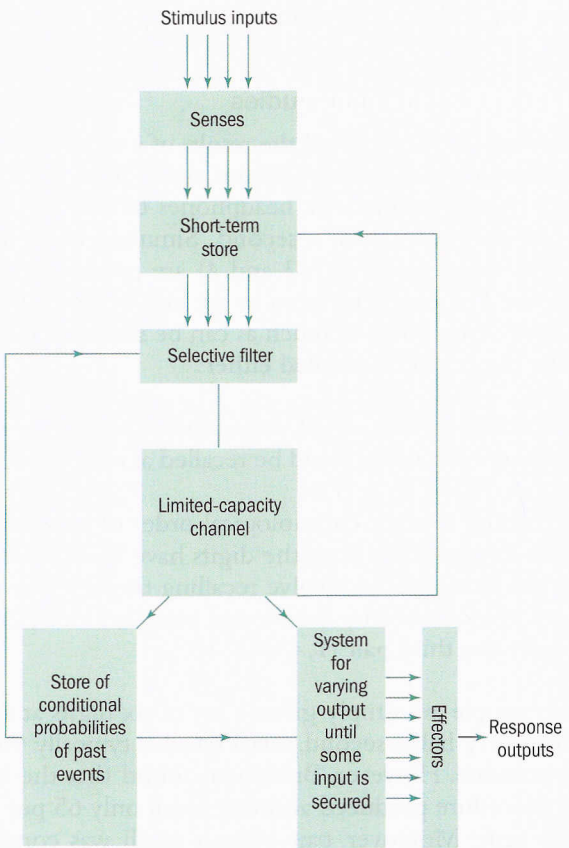


Figure 13.1 Broadbent's theory of the flow of information between stimulus and response

Information allowed through the filter reaches a limited-capacity channel (the filter is necessary precisely because the channel is capacity-limited). This corresponds to the 'span of consciousness' (James, 1890) or what we experience as happening *now*. The information allowed through the filter is analysed in that it's recognised, possibly rehearsed, and then transferred to the motor effectors (muscles), producing an appropriate response.

Broadbent considered the short-term store to be capable of holding information for a period of time before it decayed. So, two simultaneous stimuli can be processed provided the processor can get back to the store before the information in it has disappeared. Consequently, attending to one thing doesn't necessarily mean that everything else is lost. However, Broadbent maintained that processing two different pieces of information from two channels would always take longer, and be less efficient, than processing the same information from one channel. This is because switching attention between channels takes a substantial period of time.

Tests of Broadbent's theory

ASK YOURSELF...

- How can Broadbent's theory explain (a) Cherry's findings concerning the fate of the non-shadowed message, and (b) the data from the split-span experiments?

According to the filter theory, (a) the non-shadowed message isn't allowed to pass through the filter, and (b) the input to the relevant ear is the physical property on which the information is selected.

However, the theory assumes that because the non-shadowed message is filtered out according to its physical characteristics, its meaning shouldn't be subject to any sort of higher-level analysis. But when we're at a party, our attention sometimes switches from the person we're conversing with to another part of the room (if, for example, we hear our name mentioned). This was demonstrated experimentally by Moray (1959), who found that when the participant's name was presented to the non-attended (non-shadowed) ear, attention switched to that ear about one-third of the time.

KEY STUDY 13.1 Why use one ear when two will do? (Gray & Wedderburn, 1960)

- Gray and Wedderburn presented, to each ear alternately, the syllables composing a word, plus random digits. Thus, when one ear 'heard' a syllable, the other 'heard' a digit. For example, in one experiment, participants heard:
  Left ear: OB 2 TIVE
  Right ear: 6 JEC 9

- In other experiments, phrases were used in place of words, such as 'Dear Aunt Jane', 'Mice eat cheese' and 'What the hell'.



ASK YOURSELF...

- What would Broadbent have predicted about participants' responses when asked to repeat what they'd heard in one ear (or channel)?

- According to Broadbent, participants should have reported 'ob-two-tive', or 'six-jec-nine'. This, of course, is nonsense. But the filter model maintains that it's the physical nature of the auditory signal (which ear receives which input), and not meaning which determines what's attended to and, hence, what's recalled.
- What participants actually reported was 'objective' or 'Dear Aunt Jane' etc. In other words, they acted 'intelligently'. The ears don't always function as different information channels, and switching between channels is fairly easy to do.

An evaluation of Broadbent's theory

The importance of meaning

- Treisman (1960) found that if meaningful material presented to the attended ear was switched in mid-sentence to the non-attended ear, participants would occasionally change the focus of their attention to the non-attended ear, and shadow that material before changing back to the attended ear.
- Treisman (1964) discovered that if a French translation of the shadowed material was presented as non-shadowed material, some bilingual participants realised that the shadowed and non-shadowed material had the same meaning.
- Corteen & Wood (1972) conditioned participants to produce a galvanic skin response (GSR) whenever they heard a particular target word. A small electric shock was delivered immediately after the target word was heard. The target word produced a GSR when presented to the non-attended ear, as did synonyms. However, GSRs didn't occur every time the conditioned words were presented.
- Mackay (1973) presented the word 'bank' in a sentence, and participants subsequently had to recognise the sentence they'd heard. Recognition was influenced by whether the word 'river' or 'money' had been presented to the non-attended ear.

What these studies, and that of Gray and Wedderburn (see Key Study 13.1), suggest is that the meaning of the input to the non-attended ear is processed at least some of the time. Further, Underwood (1974) found that participants trained at shadowing can detect two-thirds of the material presented to the non-attended ear. This throws doubt on Broadbent's claim that the non-shadowed message is always rejected at an early stage of processing. Also, when material used is sufficiently different (such as one being auditory and the other visual), memory for the non-shadowed message is good. This indicates that it must have been processed at a higher level than proposed by Broadbent (Allport *et al.*, 1972).

Treisman's attenuation (or stimulus-analysis system) model

According to Treisman (1960, 1964), competing information is analysed for things other than its physical properties, including sounds, syllable patterns, grammatical structure and the information's meaning (Hampson & Morris, 1996). Treisman suggested that the non-shadowed message isn't filtered out early on, but that the selective filter *attenuates* it. So, a message that isn't selected on the basis of its physical properties wouldn't be rejected completely, but its 'volume' would be 'turned down'.

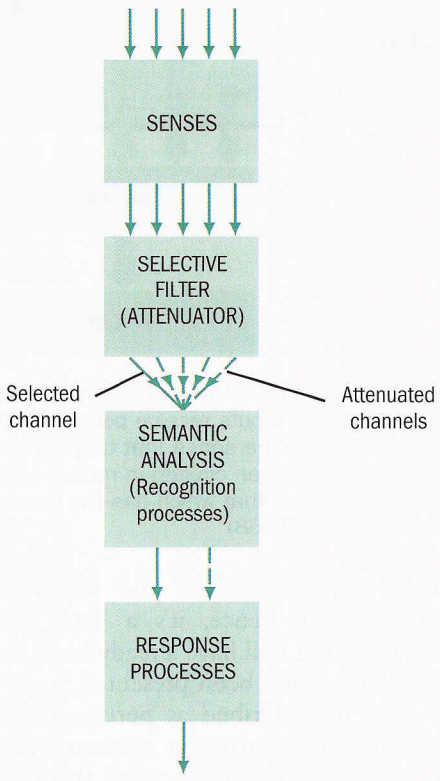


Figure 13.2 Treisman's attenuation model

Both non-attenuated and attenuated information undergoes these further analyses. This may result in an attenuated message being attended to, depending on its features.

Treisman suggested that biologically relevant and emotionally important stimuli may be 'pre-sets' to which attention is switched, irrespective of the attenuated message's content. This accounts for our ability to switch attention to a different conversation when our name is mentioned. Since it's the features of a stimulus that determine whether or not it's attended to, the concept of *probabilistic filtering* is perhaps a better way of appreciating Treisman's theory than that of attenuation (Massaro, 1989).

The Deutsch–Norman late-selection filter model

Deutsch & Deutsch (1963) and Norman (1968, 1976) completely rejected Broadbent's claim that information is filtered out early on. According to the Deutsch–Norman model, filtering or selection occurs only after all inputs have been analysed at a high level, for example after each word has been recognised by the memory system and analysed for meaning.

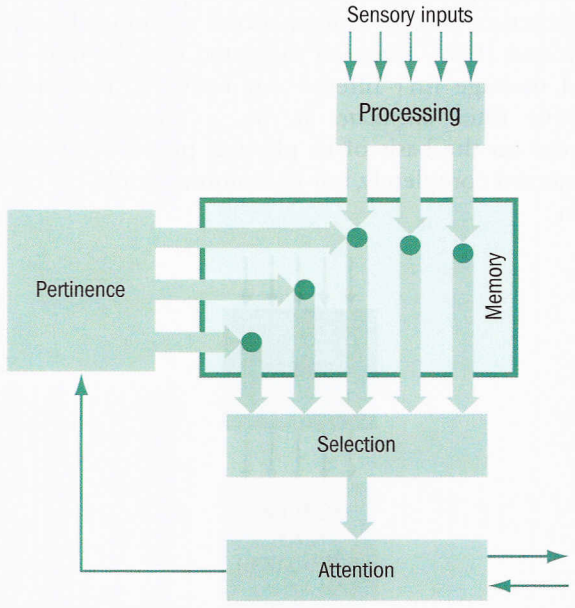


Figure 13.3 The Deutsch–Norman theory of focused attention. All sensory inputs receive perceptual processing and are recognised in the sense that they excite their representations (the green circles) in memory. The information selected is that which has the greatest pertinence (Norman, 1968)

The filter is placed nearer the *response* end of the processing system; hence, it's a 'late' selection filter. Because processing will have already been undertaken on the information that's been presented, some information will have been established as pertinent (most relevant) and have activated particular memory representations. This is why it's sometimes called the *pertinence model*. When one memory representation is selected for further processing, attention becomes selective. The model implies that we perceive everything we encounter, but are consciously aware of only some of it (Hampson & Morris, 1996).

Tests of the Treisman and the Deutsch–Norman models

Both the Treisman and the Deutsch–Norman models can account for the processing of non-shadowed material (whereas Broadbent's theory cannot). If the Deutsch–Norman model is correct, then participants should be able to identify as many target words in the non-shadowed message as in the shadowed message, since both are allegedly completely analysed for meaning. Treisman & Geffen (1967), however, found that target words were much better detected in the shadowed message (87 per cent) than the non-shadowed message (8 per cent). This is consistent with Treisman's view that the non-shadowed message is attenuated.

However, Treisman and Geffen's findings assume that the shadowed and non-shadowed messages are equally important. Deutsch & Deutsch (1967) argued that this assumption wasn't met, because participants had to indicate when they heard a target word by tapping. In other words, they had to shadow and tap in one message, but only tap in the other. This made the target words in the shadowed message more important than those in the non-shadowed message. Treisman & Riley (1969) overcame this problem by requiring participants to stop shadowing and to tap as soon as they detected a target word in either ear. Under such conditions, performance was still better for the shadowed message (76 per cent) than for the non-shadowed message (33 per cent).

This finding is consistent with Treisman's model, but inconsistent with the Deutsch–Norman claim that performance shouldn't differ (since the targets were equally pertinent irrespective of the ear they were presented to). However, the detection rate for the non-attended ear in Treisman and Riley's study (33 per cent) was much higher than that in the Treisman and Geffen study (8 per cent). This provides some support for the Deutsch–Norman model.

The Deutsch–Norman model predicts that participants asked immediately afterwards should be able to repeat back the words presented to the non-shadowed ear. However, the non-shadowed message gets into short-term memory for only a brief period and is then forgotten very quickly. Norman (1969) found that participants could remember the last couple of words presented to the non-attended ear if tested immediately, but not after a short continuation of the shadowing task. This finding was replicated by Glucksberg & Cowan (1970).

ASK YOURSELF...

- Can you think of examples where you've remembered something later that you weren't aware of hearing at the time (such as something somebody said)?
- Which of the theories of attention discussed above best accounts for these occurrences?

An evaluation of single-channel models

- Despite some support for the Deutsch–Norman model, Wilding (1982) believes that less is known about non-attended messages than it claims. However, more is known than can be explained by either Broadbent's or Treisman's models.
- The major criticism of single-channel theories is their lack of flexibility, and several more 'flexible' theories have been advanced. According to Johnston & Heinz (1978), attentional selectivity can occur at several different stages of processing, depending on the demands made by the experimental task. To minimise demands on capacity, selection is made as early as possible.
- Johnston & Heinz (1979) and Johnston & Wilson (1980) presented findings consistent with their view that processing is more flexible than predicted by single-channel theories. For example, Johnston and Wilson showed that participants processed words presented to both ears, but only when they didn't know to which ear particular target words would be presented. These data suggest that non-target words are processed only to the extent necessary to perform a task.
- Many researchers question whether any single, general purpose, limited-capacity central processor can, in principle, account for the complexities of selective attention (Allport, 1980b; Neisser, 1976; Norman & Bobrow, 1975). Much of the relevant evidence comes from dual-task studies, which are more directly concerned with processing capacity, i.e. divided attention (see below).

FOCUSED VISUAL ATTENTION

According to Driver (1996):

> The cluttered scenes of everyday life present more objects than we can respond towards simultaneously, and often more than we can perceive fully at any one time. Accordingly, mechanisms of attention are required to select objects of interest for further processing. In the case of vision, one such mechanism is provided by eye movements, which allow us to fixate particular regions so that they benefit from the greater acuity of the fovea.

The fovea (see Figure 5.2, page 81) provides maximum acuity for visual stimuli. So, when we fixate on an object, maximum visual processing is carried out on the object whose image is projected on to the fovea. The resources given to the other parts of the visual field are 'attenuated' (Anderson, 1995b).

Posner *et al.* (1978, 1980) found that when people are told to fixate on one part of the visual field, it's still possible to attend to stimuli seven or so degrees either side of the fixation point. Also, attention can be shifted more quickly when a stimulus is presented in an 'expected' rather than an 'unexpected' location. Thus, visual attention isn't confined to the part of the visual field which is processed by the fovea, but can be shifted without corresponding changes in eye movements. Indeed, such shifts in attention frequently *precede* the corresponding eye movement (Anderson, 1995b). Posner (1980) calls this *covert attention*.

The internal mental spotlight and the zoom lens

Posner likened covert attention to an internal mental spotlight that 'illuminates' any stimulus in the attended region, so that it's perceived in greater detail. It essentially duplicates the functions of eye movements *internally*, by allowing a particular region of space to be perceptually enhanced (Driver, 1996).

LaBerge (1983) required participants to judge whether the middle letter of five letters (such as LACIE) came from the beginning or end of the alphabet (*directed attention condition*). But on some occasions, a stimulus such as –7– – – was presented, and the task was to determine whether the 7 was one of two letters (T or Z). LaBerge found that the speed of judgement was a function of the distance from the centre of attention. Thus, reaction times were fastest for items at the centre of the stimulus and slower for those at its periphery, even though all items were within the fovea's region.

LaBerge concluded that visual attention is most concentrated at the centre of the internal spotlight and least at its periphery. When information beyond its centre needs to be processed, the spotlight must be shifted to ensure maximal processing. Because this takes time, participants in Posner *et al.*'s experiments took longer to judge a stimulus when it appeared in an 'unexpected' location (Eriksen & Yeh, 1987).

LaBerge also found that when participants were required to attend to the whole five-letter word string (*global attention condition*), the 'width' of the spotlight's 'beam' increased (based on the similarity of reaction times for items at the centre and periphery). These findings led Eriksen (1990) to propose the *zoom-lens model* of visual attention. This accepts the existence of an internal mental spotlight, but suggests that it has a beam which may be very narrow (in the case of LaBerge's letter task) or broad (in the case of LaBerge's word task). It's simply a variable-beam spotlight (Groome *et al.*, 1999).

An evaluation of the spotlight model

Despite evidence that little or no processing occurs beyond the spotlight (Johnston & Dark, 1986), both the spotlight and zoom-lens models have been contradicted in several studies.

KEY STUDY 13.2 Neisser & Becklen's (1975) study of selective visual attention

- Visual selective attention was studied by superimposing a film of three people playing a ball game on a film which showed two people's hands clapping (see Figure 13.4).

- The task was to follow one of the films and press a key to indicate that a 'critical event', such as the ball being thrown, had occurred.
- Adults found it difficult to follow both films simultaneously, but they were able to attend selectively to one or other of the films easily.
- This is difficult for the zoom-lens model to explain, since it proposes that the focus of attention is a given area in visual space, rather than objects within that area (Eysenck & Keane, 1995).
- Using Neisser and Becklen's methodology, it's been shown that infants as young as four months can selectively follow one of the two films. This suggests that selective visual attention is innate rather than learned (Bahrick *et al.*, 1981: see Chapter 16).

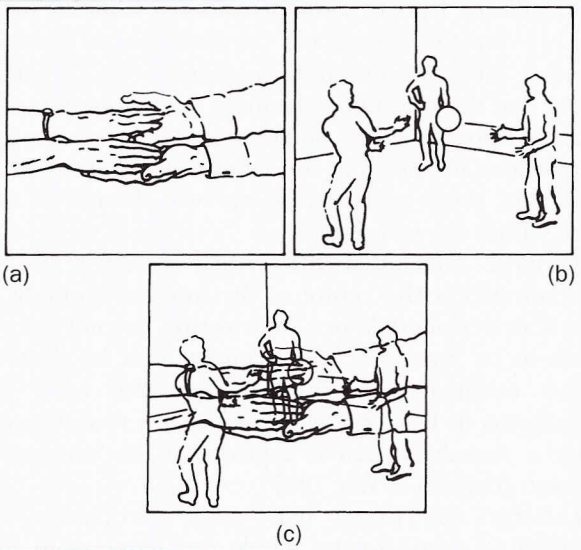


Figure 13.4 A film of two people clapping hands (a), and three people playing a ball game (b), which have been superimposed (c)

The fate of unattended visual stimuli

For Johnston & Dark (1986), stimuli beyond the focus of visual attention are subject to no, or virtually no, semantic processing. Any such processing is limited to mainly simple physical features. However, Driver (1996) disagrees. For example, when a picture is shown as the unattended stimulus on one trial, it slows the processing of an attended word with an identical or similar meaning on the next trial (*negative priming*). The fact that processing of the attended stimulus is reduced suggests that the meaning of the unattended stimulus must have been subject to some sort of processing (Tipper & Driver, 1988).

Treisman's feature-integration theory

Treisman's (1988) theory was developed on the basis of findings using the visual search procedure. Participants are presented with an array of visual material in which a target item is embedded on some trials but absent on others, and the 'distractor' items can be varied so that they're similar to the target letter, or different from it. The participant's task is to decide if the target is present or absent.

X P T L A B N T
A R H N J I F R
E W R N P A Z X
A H Y 5 Y T E S
A N H C E S T I
G D T K D Y U I

Figure 13.5 A visual search array. The task is to find the number five amongst the letters

Neisser (1967) argued that when people perform a visual search task, they process many items simultaneously, without being fully 'aware' of the exact nature of the distractor items. Visual information processing might occur pre-attentively, depending on the nature of the stimuli (such as whether they have angular or curved features when the task is to detect a particular letter).

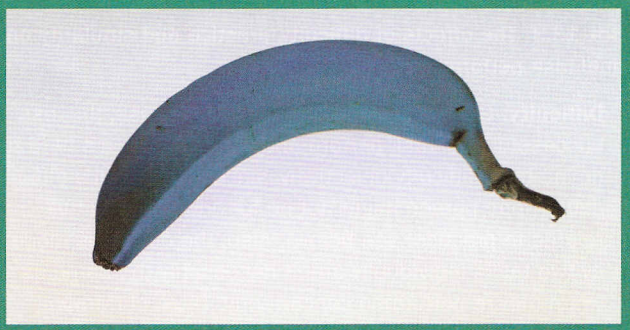
However, Treisman argues that attention must be focused on a stimulus before its features can be synthesised into a pattern. In one of Treisman & Gelade's (1980) experiments, participants were required to detect the presence of the letter T amongst an array of Is and Ys. Because the horizontal bar at the top of a T distinguishes it from an I and a Y, this could be done fairly easily just by looking for the horizontal bar. Participants took around 800 milliseconds to detect the T, and the detection time wasn't affected by the size of the array (that is, the number of Is and Ys).

In another experiment, the T was embedded in an array of Is and Zs. Here, looking for a horizontal bar on its own doesn't aid detection, since the letter Z also has a horizontal bar on top of it. To detect a T, participants needed to look for the conjunction of a horizontal and vertical line. This took around 1200 milliseconds. Moreover, detection time was longer when the size of the array was increased. On the basis of these (and other) findings, Treisman proposed her *feature-integration theory*.

Box 13.2 Treisman's feature-integration theory (FIT)

- According to Treisman, it's possible to distinguish between objects (such as a strawberry) and their features (such as being red, possessing curves and being of a particular size).
- In the *first stage* of visual processing, we process the features of stimuli in the visual environment rapidly and in parallel, without attention being required.

- Next, the features are combined to form objects (such as a small, red curved object). This *second stage* of processing is a slow and serial process.
- Focusing attention on an object's location provides the 'glue' that allows meaningless features to be formed into objects. But features can also be combined on the basis of knowledge stored in memory (such as the knowledge that strawberries are typically red).
- When relevant stored knowledge isn't available or focused attention is absent, feature combination occurs in a random way. This can produce *illusory conjunctions* (for example, a blue banana) or odd combinations of features.



(Source: based on Anderson, 1995b, and Eysenck & Keane, 1995)

An evaluation of Treisman's theory

- Treisman has claimed evidence for the occurrence of illusory conjunctions in her visual search experiments. Treisman & Schmidt (1982), for example, required participants to identify two black digits flashed in one part of the visual field. In another part, letters in various colours were presented (such as a blue T or a red S). After reporting the digits, participants were asked what letters they'd seen and their colour. Most reported seeing illusory conjunctions (such as a blue S) almost as frequently as correct conjunctions. This supports the view that accurate perception occurs only when attention is focused on an object. When it's not, the features of objects are processed but not always combined accurately.
- However, results from experiments in which moving items are intermingled with static items challenge Treisman's theory.

KEY STUDY 13.3 The moving target experiment (McLeod *et al.*, 1991)

- Participants were asked to search for the presence or absence of a single moving X amongst static Xs and moving Os.
- The target is defined only by its specific conjunction of form and movement, since its shape is shared with the static Xs and its movement with the Os.
- Treisman's theory would predict that serial attention was necessary for each item when searching for the target, so that decision times would increase with an increasing number of distractors.
- In fact, the target was found easily regardless of the display's size.
- This implies a *parallel process*, and in other experiments McLeod *et al.* showed that the parallel search arose because attention could be restricted to just the group of items with common motion to the exclusion of the static items. Because the target has a unique shape, it can be detected in parallel.

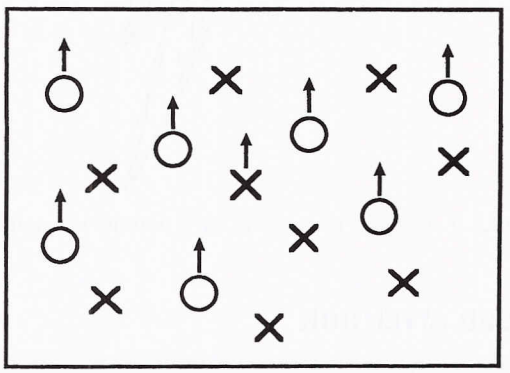


Figure 13.6 A schematic representation of the display used by McLeod *et al.* (1991). The arrows indicate motion, and the task is to search for a single moving X among moving Os and intermingled static Xs

Visual attention and brain damage

Many researchers are interested in the brain regions involved in attention (e.g. Muller & Maxwell, 1994; Halligan, 1995; Driver, 1996). People who've suffered a right-hemisphere stroke involving the *parietal lobe* may completely ignore stimuli occurring on the *left side* (see Chapter 4). For example, they may fail to eat food from the left side of their plate, and be unaware of their body on that side. The fascinating thing about this *unilateral visual neglect* is that these effects occur even though the pathways from the receptors to the central nervous system for the neglected information remain intact.

According to Posner & Petersen (1990), the parietal lobe is responsible for disengaging attention from its present focus, and patients with damage to the *pulvinar nucleus* (part of the thalami) have difficulty in shifting attention to a new target (Rafal & Posner, 1987).

Interestingly, among four- to ten-year-old children, those who took less time to switch attention in a specially devised computer game were more likely to show awareness of traffic as they approached a busy road (Dunbar *et al.*, 1999).



Figure 13.7 Drawing of a parrot by a person with left-side neglect

DIVIDED ATTENTION

ASK YOURSELF...

- What are you doing now, apart from reading this sentence?
- What other examples can you give of being able to do more than one thing at a time?
- How can you explain this ability?

Some demonstrations of dual-task performance

Allport *et al.* (1972) showed that skilled pianists were able to read music successfully while shadowing speech. Later, Shaffer (1975) reported the case of an expert typist who could type accurately from sight while shadowing speech. But perhaps the most striking example of dual-task performance comes from Spelke *et al.* (1976), who had two students spend five hours a week training at performing two tasks simultaneously.

Initially, the students were required to read short stories while writing down dictated words. At first they found this difficult, and both their comprehension and writing suffered. But after six weeks of training, they could read as quickly, and comprehend as much of what they read, when reading with dictation as when reading without it. Interestingly, though, they could remember very little of what they'd written down, even though thousands of words had been dictated to them over the course of the experiment.

At this point, the task was altered and the students had to write down the category a word belonged to (requiring more processing of the words), while simultaneously reading the short stories. Although the task was again difficult initially, they eventually performed it without any reduction in their comprehension of the stories.

Factors affecting dual-task performance

According to Hampson (1989), factors that make one task easier also tend to make the other easier because:

> Anything which minimises interference between processes or keeps them 'further apart' will allow them to be dealt with more readily either selectively or together.

Eysenck & Keane (1995) identify three factors which affect our ability to perform two tasks at once. These are *difficulty*, *practice* and *similarity*.

Box 13.3 The effects of difficulty, practice and similarity on dual-task performance

Difficulty: Generally, the more difficult the task, the less successful dual-task performance is. However, it's hard to define task difficulty objectively, since a task that's difficult for one person might not be for another (and this relates to practice: see below). Also, the demands made by two tasks individually aren't necessarily the same as when they're performed concurrently. Thus, performing two tasks together may introduce fresh demands and the risk of interference.

Practice: As we've seen, practice improves dual-task performance. This could be because people develop new strategies for performing each task, minimising interference between them. Another possibility is that practice reduces a task's attentional demands. Finally, practice may produce a more economical way of functioning that uses fewer resources (see pages 226–228).

Similarity: Allport *et al.* (1972) showed that when people are required to shadow one message and learn pictorial information, both tasks can be performed successfully. This is presumably because they don't involve the same stimulus modality. Two tasks also disrupt performance when both rely on related memory codes (such as visual memory), make use of the same stages of processing (such as the input stage), or require similar responses to be made.

(Source: based on Eysenck and Keane, 1995)

Theories of divided attention

As we noted earlier, models of selective attention assume the existence of a limited-capacity filter capable of dealing with one information channel at a time. As Hampson & Morris (1996) have observed, these theories:

> ... imply a series of stages of processing, starting with superficial, physical analysis, and working 'upwards' towards the 'higher' cognitive analyses for meaning.

In Hampson and Morris's view, these processes are better thought of as an integrated mechanism, with the high

and low levels interacting and combining in the recognition of stimuli. Accordingly, it's better to look at the system's overall processing.

Limited-capacity theories

Kahneman's theory

According to Kahneman (1973), humans have a limited amount of processing capacity, and whether or not tasks can be performed successfully depends on how much demand they make on the limited-capacity processor. Some tasks require little processing capacity, leaving plenty available for performing another task simultaneously. Others require much more, leaving little 'spare'.

The process of determining how much capacity is available ('effort') is related to the allocation of that capacity. How much capacity a task requires depends on things like its difficulty and a person's experience of it. How capacity is allocated depends on *enduring dispositions*, *momentary intentions*, and the *evaluation of the attentional demands* (see Figure 13.8, below). The central processor is responsible for the allocation policy, and constantly evaluates the level of demand. When demand is too high, the central processor must decide how available attention should be allocated.

Kahneman sees arousal as playing an important part in determining how much capacity is available. Generally, more attentional resources are available when we're aroused and alert than when we're tired and lethargic. Attention can be divided between tasks provided the total available capacity isn't exceeded. This explains the findings of the dichotic listening tasks discussed earlier: shadowing requires almost all of the capacity available, leaving the non-shadowed message insufficient capacity. Kahneman's theory also predicts that as skill at carrying out a task increases, so less capacity is needed for it and more becomes available for other tasks. Thus, when people are trained at shadowing, they become able to shadow and to attend to the non-shadowed message (Underwood, 1974).

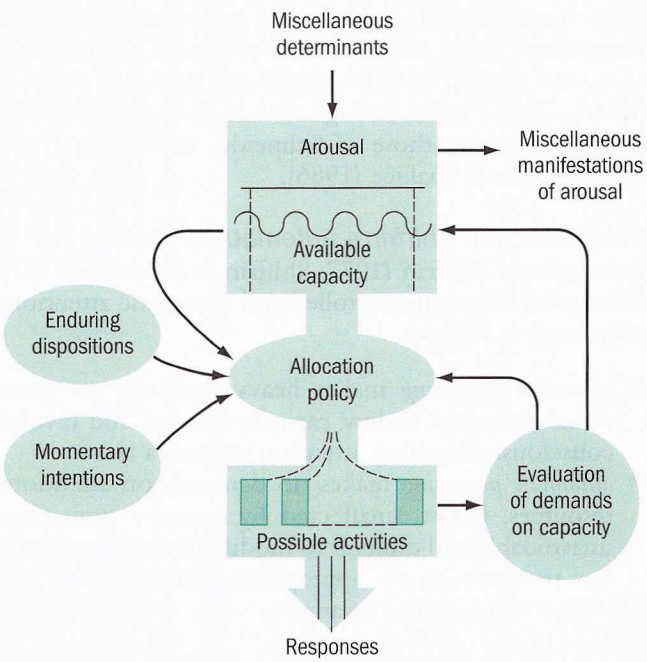


Figure 13.8 Kahneman's theory of attention. Enduring dispositions are the rules for allocating capacity which are outside voluntary control. These include allocating capacity to novel stimuli and hearing one's own name used in a different conversation. Momentary intentions are voluntary shifts in attention such as listening to a message in a dichotic listening task. Evaluation of demands on capacity include rules for overload on the system, such as deciding to complete one task rather than failing to complete two

Evaluation of Kahneman's theory

Kahneman's theory portrays attention as a much more flexible and dynamic system than do the models of focused attention. However, it doesn't address the issue of how decisions to channel attention are made. The difficulty in defining the general limits of capacity has led some researchers to suggest that the concept of a limited capacity should be abandoned (Hampson & Morris, 1996).

Norman and Bobrow's theory

Following on from Kahneman, Norman & Bobrow (1975) have offered a *central capacity interference account* of attentional phenomena.

Box 13.4 Norman & Bobrow's (1975) central capacity interference theory (CCIT)

- This theory's central feature is its distinction between *resource-limited* and *data-limited* processes.
- On a complex task, performance is related to the amount of resources devoted to it. As more resources are allocated, so task performance improves *up to some point*. Performance is thus resource-limited.
- But on some tasks, applying more resources doesn't lead to improved performance because of external influences (as when participants are required to identify a quiet tone amongst loud, masking 'white' noise). This sort of task is data-limited, because performance can be improved only by altering the stimuli (such as by making the tone louder and/or the masking noise quieter).

Evaluation of Norman and Bobrow's theory

This distinction between resource- and data-limited processes can explain findings from both focused and divided attention research. For example, Treisman & Geffen (1967: see page 220) found that participants shadowing words in one ear had difficulty recognising target words presented simultaneously to the other ear. Lawson (1966), however, found that under similar conditions participants could detect target tones presented in the non-attended ear. This finding can be explained by

proposing that the tone-detection process becomes data-limited much sooner than the word-recognition process.

However, the theory's biggest weakness is its inability to predict beforehand the results an experiment is likely to produce. Because it allows for differential allocation of resources to tasks, an experimenter can never know the level of resources allocated to a particular task. Any results can therefore be interpreted in a way consistent with the theory, and no results can ever be taken as negative evidence.

Multi-channel theories

Supporters of limited-capacity models defend their approach by pointing out that the attentional system breaks down as more and more is demanded of it. Also, if data from divided-attention studies are considered carefully it's not true that two tasks can be performed together with no disruption at all (Broadbent, 1982). Nevertheless, several researchers have rejected the concept of a general-purpose, limited-capacity processor completely. For Allport (1980b, 1989, 1993), the concept of attention is often used synonymously with 'consciousness', with no specification of how it operates. This has done little to increase our understanding of the very problems it's meant to explain.

Modules and multiple resources

According to Allport, it's difficult to see how the neurology of the brain could produce a system of processing capacity that was completely open to any of the tasks that might be presented to it (Hampson & Morris, 1996). It's much more profitable to view the data in terms of tasks competing for the same specialised processing mechanisms or modules, each of which has a limited capacity but none of which is uniquely 'central'.

When two tasks are highly similar, they compete for the same modules, and this leads to performance impairments. However, because dissimilar tasks use different modules, both can be performed simultaneously. A virtually identical theoretical account has been proposed by Navon & Gopher (1979) and Wickens (1992) in their *multiple-resource theory*. Certainly, the findings of dual-task studies (e.g. Allport *et al.*, 1972) are consistent with the idea of different processing mechanisms handling the requirements of different tasks.

However, this approach is also non-falsifiable, since any pattern of data can be explained by proposing the existence of a particular pattern of modules (Navon, 1984). If multiple resources do operate in parallel, they must do so in a highly integrated way, since our behaviour is typically coherent (Eysenck & Keane, 1995).

Attempts at synthesising capacity and module accounts

According to Eysenck (1982, 1984, 1997a) and Baddeley (1986), a much better way of accommodating the data from divided-attention studies is to see capacity and module accounts as being complementary rather than competitive. *Synthesis models* propose the existence of a *modality-free central capacity processor*, which is involved in the coordination and control of behaviour, and *specific processing systems*. In Baddeley's (1986) *working memory model*, for example, there are two independently operating and specific systems, an *articulatory/phonological loop* and a *visuo-spatial scratch pad*. These systems can explain why overt repetition of an overlearned sequence of digits doesn't interfere with verbal reasoning, since the former uses an articulatory loop and the latter a central processor (see Chapter 17, pages 292–294).

ASK YOURSELF...

- Thinking of a skill you possess (such as driving a car or playing a musical instrument), how did demands on your attention and concentration change during the course of acquiring it?
- Can you now do things at the same time as performing these skills that you couldn't have done while learning them?

Automatic vs controlled processing

As we've seen, both laboratory evidence and everyday experience indicate that we can learn to perform two tasks simultaneously and highly efficiently. For some researchers, this is because many processes become *automatic*, that is, they make no attentional demands, if they're used/practised often enough. Two important theoretical contributions are those of Schneider & Shiffrin (1977) and Norman & Shallice (1986).

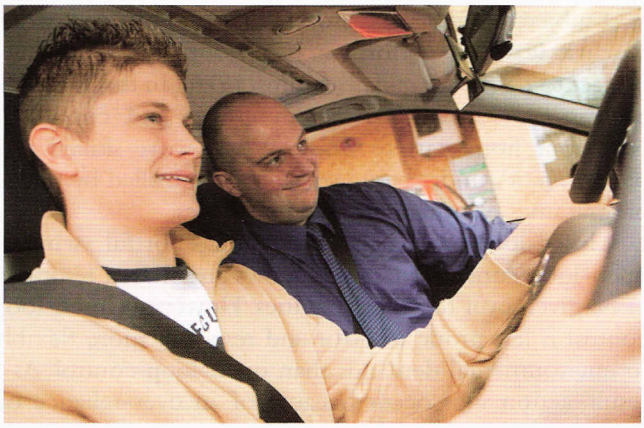
Schneider and Shiffrin's automaticity model

Schneider & Shiffrin (1977; Shiffrin & Schneider, 1977) distinguish between controlled and automatic attentional processing as follows:

- *controlled processing* makes heavy demands on attentional resources, is slow, capacity-limited, and involves consciously directing attention towards a task
- *automatic processing* makes no demands on attentional resources, is fast, unaffected by capacity limitations, unavoidable and difficult to modify (it always occurs in the presence of an appropriate stimulus), and isn't subject to conscious awareness.

The results of several studies (e.g. Schneider & Fisk, 1982) are consistent with Schneider and Shiffrin's view. If people are given practice at a task, they can perform it quickly and accurately, but their performance is resistant to change. An example of apparent automaticity in real life occurs when we learn to drive a car. At first, focused attention is required for each component of driving, and any distraction can disrupt performance. Once we've learned to drive, and as we become more experienced,

our ability to attend simultaneously to other things increases.



At first, learning to drive a car, like other psychomotor skills, requires focused attention. The experienced driver, however, displays automaticity

Logan (1988) suggests that automaticity develops through practice, because automatic responses involve an almost effortless retrieval of an appropriate and well-learned response from memory. This doesn't involve conscious memory, because no thought processes intervene between the presentation of a stimulus and the production of an appropriate response. In Logan's view, then, automaticity occurs when stored information about the sequence of responses necessary to perform a task can be accessed and retrieved rapidly.

An evaluation of Schneider and Shiffrin's model

Despite its intuitive appeal, it's unclear whether automaticity results from a speeding up of the processes involved in a task, or a change in the nature of the processes themselves. Also, the view that automatic processing makes no demands on attention has been challenged by findings indicating that allegedly automatic tasks do influence the performance of simultaneously performed tasks (e.g. Hampson, 1989). Additional problems occur with the Stroop effect.

KEY STUDY 13.4 The Stroop effect

- Stroop (1935) showed that if a colour word (such as 'blue') is written in a conflicting colour (such as 'blue' being written in red), participants find it difficult to name the colour the word's been written in.

RED	BLACK
BLUE	YELLOW
GREEN	BLACK
YELLOW	GREEN
BLUE	RED

- Because reading is such a well-learned, unavoidable and automatic activity, the word interferes with the requirement to name the colour.

ASK YOURSELF...

An analogue of the Stroop effect can be tried here.

- Say as quickly as you can the number of characters in each of the rows below.

5 5 5
1 1 1 1
2
3 3 3 3 3
4 4
5 5 5
4 4 4 4 4
5 5 5 5
3
4 4 4
2 2 2 2
3 3
4 4 4
1 1 1 1
3
2 2 2

- Flowers *et al.* (1979) found that people have difficulty resisting saying the numbers that make up each row rather than counting the numbers, because number recognition is much more automatic compared with number counting. But automatic responses aren't always unavoidable (Eysenck, 1993).

Norman and Shallice's SAS model

To overcome what Eysenck (1993) calls the 'unavoidability criterion', Norman & Shallice (1986) proposed that processing involves two separate control systems: *contention scheduling* and the *supervisory attentional system* (SAS). Some behaviours involve *fully automatic processing*, which occurs with little conscious awareness of the processes involved, and is controlled by *schemas* (organised plans for behaviour: see below, and Chapter 21, pages 356–358).

However, such processes are capable of disrupting behaviour, and so contention scheduling occurs as a way of resolving conflicts among schemas. This produces *partially automatic processing*, which generally involves more conscious awareness than fully automatic processing, but doesn't require deliberate direction or conscious control. *Deliberate control* involves the SAS and occurs in decision-making and trouble-shooting, allowing flexible responding to occur in novel situations. Baddeley (1997) claims that the SAS is like the operation of free will, while contention scheduling leaves no place for free will (see Chapter 49).

An evaluation of Norman and Shallice's model

According to Eysenck & Keane (1995), Norman and Shallice's model is superior to Schneider and Shiffrin's because it:

... provides a more natural explanation for the fact that some processes are fully automatic whereas others are only partially automatic.

Their SAS model isn't worked out in the same degree of detail, nor empirically tested as extensively as Schneider and Shiffrin's automaticity model. But it provides a very useful basis for conceptualising the central executive of Baddeley & Hitch's (1974) working-memory model (Baddeley, 1997: see Chapter 17, pages 292–294).

Action slips

ASK YOURSELF...

- Have you ever done something you didn't intend to do or, conversely, failed to do something you *did* intend to do?
- How might you explain these 'lapses' in terms of attentional processes?

Action slips have been defined as the performance of unintended actions, or actions which deviate from the actor's intentions, and have been extensively researched by Reason (1979, 1992). Reason originally asked 36 participants to keep a diary record of the action slips they made over a four-week period; they recorded 433 action slips between them. Reason was able to place 94 per cent of these into one of five categories.

Box 13.5 Reason's five categories of action slips

Storage failures: repeating an action that's already been completed. For example, pouring a second kettle of boiling water into a teapot of freshly made tea without any recognition of having made the tea already. These were the most common, accounting for 40 per cent of those recorded.

Test failures (20 per cent): forgetting the goal of a particular sequence of actions and switching to a different goal. For example, intending to turn on the radio but walking past it and picking up the telephone instead. These occur, presumably, because a planned sequence of actions isn't monitored sufficiently at some crucial point in the sequence.

Sub-routine failures (18 per cent): either omitting or re-ordering the stages in a sequence of behaviour. For example, making a pot of tea but failing to put any tea bags in it.

Discrimination failures (11 per cent): failing to discriminate between two objects involved in different actions. For example, mistaking toothpaste for shaving cream.

Programme assembly failures (5 per cent): incorrectly combining actions, as in unwrapping a sweet, putting the paper in your mouth and throwing the sweet in the waste-paper bin.

(Source: based on Reason, 1992, and Eysenck, 1997b)

Explaining action slips

Closed- and open-loop control

Paradoxically, action slips seem to occur with highly practised and over-learned actions (which should, therefore, be least subject to errors). Reason (1992) proposes that when we first learn to perform a behaviour, our actions are subject to *closed-loop control* (Adams, 1976). In this, a central processor or attentional system guides and controls a behaviour from start to finish. When we're skilled at a behaviour, it's under *open-loop control*, controlled by motor programmes or other automatic processes.

Closed-loop control is slow and effortful, whereas open-loop control is fast and allows attentional resources to be given over to other activities. However, closed-loop control is less prone to error and responds more flexibly to environmental demands than open-loop control. As a result, action slips occur because of an over-reliance on open-loop control when closed-loop control (selectively attending to the task) should be occurring.

As we saw in studies of focused attention, material not attended to is typically poorly remembered because it doesn't get stored in long-term memory. So, storage failures, the most common type of action slip, can be explained in terms of open-loop induced attentional failures leading to a failure to store (and hence recall) previous actions. As a result, an action may be repeated. Other slips also seem amenable to explanation in terms of open-loop control (Eysenck, 1997b).

Schema theory

An alternative theoretical account has been advanced by Norman (1981) and elaborated by Sellen & Norman (1992). Their theory is based on the concept of the schema, first proposed by Bartlett (1932). Briefly, a schema is an organised mental representation of everything we understand by a given object, concept or event, based on past experience.

Box 13.6 Sellen & Norman's (1992) schema theory of action slips

- *Parent schemas* are the highest-level schemas, corresponding to an overall intention or goal (such as going to a football match).
- At a lower level are *child schemas*, which correspond to the actions involved in accomplishing the overall intention or goal (such as driving the car to the football ground, buying a ticket, and so on).
- Each schema has a particular *activation level*, and a behaviour occurs when the activation level is reached (which depends on the current situation and current intentions) and when appropriate 'triggering' conditions exist. If:

  (a) there's an error in the formation of an intention;
  (b) an incorrect schema is activated;

(c) activation of the correct schema is lost; or
(d) there's faulty triggering of an active schema,
(e) then an action slip occurs.

Reason & Mycielska (1982) believe that a thorough understanding of the nature of action slips is necessary to avoid potential disaster occurring in the real world. Eysenck (1995) maintains that action slips would be eliminated if we were to use closed-loop control for all behaviours, but this would be a waste of valuable attentional resources! The frequency of action slips reported by Reason's (1979) participants (an average of about one per day) suggests that people alternate between closed-loop and open-loop control as the circumstances dictate. For Eysenck (1995):

> The very occasional action slip is a price which is generally worth paying in order to free the attentional system from the task of constant monitoring of our habitual actions.

Action slips represent the minor errors of an action system that typically functions very well indeed (Eysenck, 1997b). Similarly:

> Absent-minded errors demonstrate misapplied competence rather than incompetence. (Reason, 1984)

Each type of action slip might require its own explanation. While the mechanisms underlying them may appear similar, they might actually be very different (Eysenck & Keane, 1995). Additionally, any theoretical account depends on the validity of the data it attempts to explain. The diary method used by Reason may supply weak data, because participants might not have detected some of their action slips or remembered to record them when they did (Eysenck, 1997b). As a result, the percentages reported by Reason may be inaccurate.

Box 13.7 Reason's (1992) 'oak–yolk effect' experiment

ASK YOURSELF...

- Answer the following series of questions as quickly as possible:

Q What do we call the tree that grows from acorns?
A Oak
Q What do we call a funny story?
A Joke
Q What sound does a frog make?
A Croak
Q What is Pepsi's major competitor?
A Coke
Q What's another word for cape?
A Cloak
Q What do you call the white of an egg?
A Yolk

'Yolk' is, in fact, the *wrong* answer (correct answer = albumen). Reason found that 85 per cent of his participants made this error, compared with only 5 per cent of a control group given just the final question. However, are such trick-induced action slips comparable to those that occur spontaneously in everyday life? According to Sellen & Norman (1992), the laboratory environment is the least likely place to see truly spontaneous absent-minded errors.

Finally, in Eysenck & Keane's (1995) words:

> The number of occurrences of any particular kind of action slip is meaningful only when we know the number of occasions on which the slip might have occurred but did not. Thus, the small number of discrimination failures [reported by Reason] may reflect either good discrimination or a relative lack of situations requiring anything approaching a fine discrimination.

CONCLUSIONS

It's sometimes possible to divide attention between two different tasks, although how this is achieved hasn't yet been satisfactorily explained. Two broad types of explanation are those that propose a general purpose limited-capacity processor, and those that identify modules, each with a limited capacity but none of which is central. The idea that many processes become automatic and make no demands on attention has some support, and helps explain why we sometimes perform behaviours we didn't intend. Action slips involve behaviours that are highly practised, and are the price we pay for not having continuously to monitor our actions.

CHAPTER SUMMARY

- According to Broadbent, who was trying to account for Cherry's **cocktail party phenomenon**, humans must **selectively attend** to some information and 'tune out' the rest.
- Using **binaural listening**, Cherry identified several physical differences affecting selective attention to one of two messages. He also used **dichotic listening**, in which participants had to **shadow** one of the messages. They could do this, but remembered little, if anything, of the non-shadowed message, whose meaning was completely lost.
- Three **single-channel models** share the belief in a 'bottleneck' or **filter** which allows some information to be passed on for further processing, either discarding the rest or processing it only to a limited degree. They differ mainly in terms of how early or late the filtering takes place.
- Broadbent's **early selection filter theory** accounts for Cherry's findings and his own **split-span** data. But people's ability to switch attention to the non-attended ear when their name is spoken, together with other research findings relating to the processing of **meaning**, are inconsistent with Broadbent's account.

- According to Treisman's **attenuation model**, competing information is analysed for its physical properties, *and* for sounds, syllable patterns, grammatical structures and meaning. The selective filter 'turns down' the non-shadowed message. If this includes biological 'pre-sets', our attention will switch to the non-shadowed message.
- The Deutsch–Norman **late-selection filter theory/pertinence model** sees selection as occurring only after all inputs have been analysed at a high level. The filter is nearer the response end of the processing system.
- Mechanisms involved in **focused visual attention** include eye movements that allow us to fixate specific regions of the visual field. But visual attention *isn't* confined to the part of the visual field processed by the fovea, as demonstrated by **covert attention**. This is like an **internal mental spotlight**.
- According to Eriksen's **zoom-lens model**, the internal spotlight has a beam which may be very narrow or very broad.
- According to Treisman's **feature-integration theory** (FIT), focusing attention on their location allows unitary **features** to be formed into their various **objects**. **Illusory conjunctions** can arise in the absence of relevant stored knowledge or focused attention.
- Researchers interested in **divided attention** typically measure **dual-task performance**. Three factors affecting dual-task performance are **task difficulty**, **practice** and **similarity**.
- According to Kahneman, humans have only a limited processing capacity. Different tasks require different amounts of processing capacity, leaving more or less available for performing other tasks.
- The **central processor** controls the allocation policy and constantly evaluates demand level. **Arousal** is important for determining the amount of available capacity, and the more skilled we are at a particular task, the less capacity is needed.
- Norman and Bobrow's **central capacity interference theory** (CCIT) distinguishes between **resource-limited** and **data-limited performance**.
- Several researchers have rejected the concept of a general purpose, limited-capacity processor. The most useful way of interpreting the data is in terms of tasks competing for the same **modules**, each of which has a limited capacity but none of which is uniquely 'central'.
- Two highly similar tasks compete for the same modules, leading to performance deficits, while dissimilar tasks use different modules and thus don't compete. This view is also taken by **multiple-resource theory**.
- **Synthesis models** propose the existence of a modality-free central capacity processor, plus specific independent processing systems, such as Baddeley's **articulatory/phonological loop** and **visuo-spatial scratch pad**.
- Schneider and Shiffrin distinguish between **controlled** and **automatic processing**. The '**Stroop effect**' shows that well-learned, unavoidable and automatic skills (such as reading) can interfere with other tasks (such as naming the colour of a written word).
- **Contention scheduling** is used to resolve conflicts among **schemas**, which control **fully automatic processing** and produces **partially automatic processing**. The **supervisory attentional system** (SAS) is involved in **deliberate control**, which allows flexible responses in novel situations.
- The most common types of **action slips** are **storage failures**. Other categories include **test**, **sub-routine**, **discrimination** and **programme assembly failures**.
- Action slips seem to involve actions that are highly practised or over-learned. Action slips reflect an over-reliance on **open-loop control** when **closed-loop control** (focused attention) is needed. Different types of action slip may require their own explanations.

Links with other topics/chapters

- The concept of attention has been defined in more *biological/physiological* ways, as referring to *arousal level*, *vigilance* and *alertness* (*consciousness*) (Chapters 7 and 9), and more *cognitively*. It features prominently in the cognitive revolution (Chapters 1, 2 and 3), in which *information processing* and the *computer analogy* are central (Chapter 20).
- The dependent variable (DV) in many experimental studies of both selective and divided attention is operationalised in terms of *recall* and other forms of *remembering* (Chapter 17).
- Explanations of focused visual attention go beyond what's known about the sensitivity of the *fovea* (Chapter 5).
- A person who suffers damage to the right *parietal lobe* will suffer left-sided unilateral visual neglect (Chapter 4).
- Controlled processing and deliberate control (which involves the supervisory attentional system/SAS) can be seen in terms of *free will*, while automatic processing and contention scheduling leave no room for free will (Chapter 49).
- Baddeley and Hitch's *working memory model* (of *short-term* memory) is essentially a synthesis model of divided attention: a *central executive* has overall control of two major 'slave systems', *an articulatory/phonological loop* and a *visuo-spatial scratch* (or *sketch*) *pad*. (Chapter 17).
- Norman and Shallice's SAS provides a useful basis for conceptualising the *central executive* (Chapter 17).
- Sellen and Norman's *schema* theory of action slips stems from Bartlett's research into *reconstructive memory* and the more general *schema theory* of everyday memory (Chapter 21).

Theories of PR

Template-matching hypothesis

An evaluation of TMH

Biederman's geon theory

Tests of geon theory

An evaluation of geon theory

Prototype theories of PR

An evaluation of prototype theories

Feature-detection theories

An evaluation of feature-detection theories

Face recognition

Are faces more than the sum of their parts?

Are upright and inverted faces processed differently?

Disorders of face processing

Prosopagnosia

Unilateral neglect

Capgras' delusion/syndrome

Models of face recognition

An evaluation of the Bruce and Young (1986) model

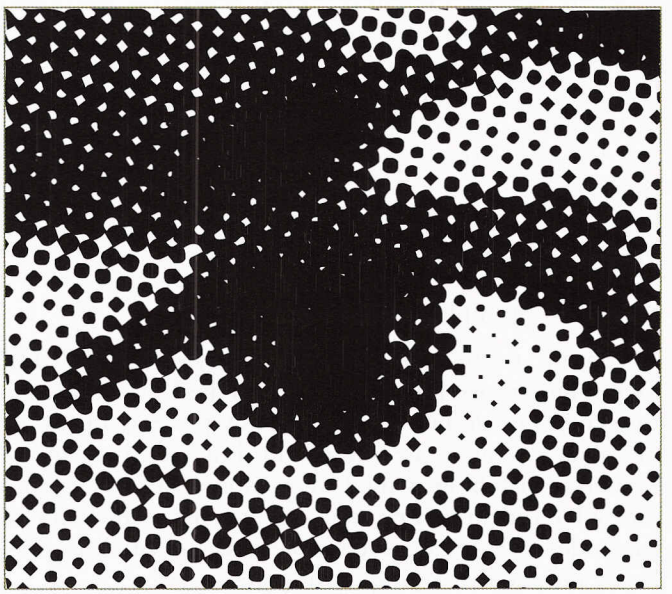
Face recognition and the brain

Chapter summary

Links with other topics/chapters

14

PATTERN RECOGNITION



INTRODUCTION AND OVERVIEW

Pattern recognition is the process by which we assign meaning to visual input by identifying the objects in the visual field (Eysenck, 1993). Although our ability to recognise, identify and categorise objects seems effortless, it actually comprises several remarkably complex achievements. While we're usually aware only of structured, coherent objects:

> Our visual systems have to 'decide' which edges, surfaces, corners and so on go together to form units or wholes. (Roth, 1995)

As Roth says, what theories of pattern recognition must do is explain the complexity of a process which 'is so ingrained in our experience that we rarely even notice that we do it' (Houston *et al.*, 1991). A way of illustrating this challenge is to consider the ease with which we're able to recognise the letter 'T', whether it's printed on paper, handwritten or spoken.



A major contribution to our understanding of this process comes in the form of the Gestalt laws of perception, which are discussed in Chapter 15. Pattern (or object) recognition can be regarded as the central problem of perception and, indeed, the terms are almost synonymous. To this extent, all the theories of perception discussed in Chapter 15 can be thought of as trying to account for pattern recognition (PR).

However, the theories discussed here are usually referred to as theories of PR (rather than perceptual theories). *Face recognition* is a special case of PR.

THEORIES OF PR

Template-matching hypothesis

According to the *template-matching hypothesis* (TMH), incoming sensory information is matched against miniature copies (or *templates*) of previously presented patterns or objects. These are stored in long-term memory. Template matching is used by computerised cash registers, which identify a product and its cost by matching a bar code with some stored representation of that code. Every product has a unique bar code.



Figure 14.1 The bar codes on the goods we buy identify them. When the bar code is read by a computerised cash register (scanned), the computer supplies the price, which is then entered on the cash register tape. The code is read by template-matching on the basis of the positions, widths and spacing of the lines

An evaluation of TMH

Given the complexity of the environment, we'd need an incredibly large number of templates, each corresponding to a specific visual input. Even if we were able to use a wheelbarrow to carry around the cerebrum needed for this, the time needed to search for a specific template would be inordinately long, and we'd never recognise unfamiliar patterns (Solso, 1995).

> ***ASK YOURSELF...***
> - How would you describe (a) a cup, (b) a torch, (c) a penguin?
> - What kinds of basic components could they be broken down into?

Biederman's geon theory

Biederman's (1987) *geon theory* of PR ('geon' stands for 'geometrical icon'), or *recognition-by-components model*, is intended to overcome TMH's limitations. Biederman's starting point is the everyday observation that if we're asked to describe an object, familiar or unfamiliar, we tend to use the same basic strategy. We almost certainly divide it into parts or components (*parsing/segmentation*), comprising various three-dimensional-shape concepts (*volumetric concepts* or *geons*), such as 'block', 'cylinder', 'funnel' and 'wedge'.

The regions of the object used to divide it up are probably the regions of greatest *concavity* (where one part makes a sharp angle with another part). According to geon theory, a very large range of different objects can be described by combining geons in various ways. Geons (simple geometric 'primitives') can be combined to produce more complex ones.

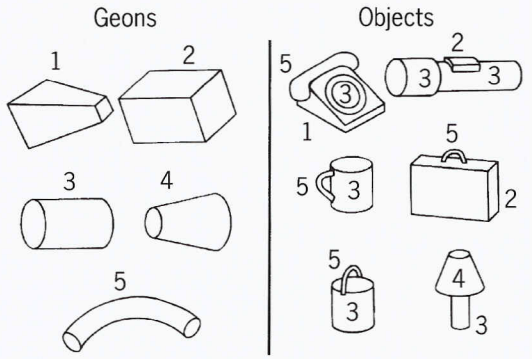


Figure 14.2 Biederman's geons (left) and some of the objects they can combine to make (right)

Component- or geon-based information extracted from the visual object is matched in parallel against stored representations of 36 geons that make up the basic set. The identification of any visual object is determined by whichever stored representation provides the best fit. But for a complete object to be recognised, there must also be a store of *complete* object descriptions, in which both the characteristic geon set and *relationships* amongst it are specified (Roth, 1995).

Tests of geon theory

According to Roth (1995), Biederman's theory was designed to:

- provide an intuitively plausible account of how we recognise objects in terms of their obvious components
- explain the fact that this recognition is both rapid and accurate, despite variations in angle of viewing and the 'degraded' information available (such as poor lighting, one object obscuring another, and so on).

One general prediction is that since an appropriate arrangement of geons provides a very powerful cue for object recognition, this recognition will occur even when an object's full complement of geons is absent.

KEY STUDY 14.1 Geons can be so degrading (Biederman, 1987)

- Biederman produced line drawings of 36 common objects, differing in complexity (the number of basic geon components needed to draw them ranged from two to nine).
- For each drawing, there were 'partial' versions (one or more geons were missing), and each stimulus was presented for 100 m/secs via a tachistoscope. Participants had to name the object aloud as quickly as possible.

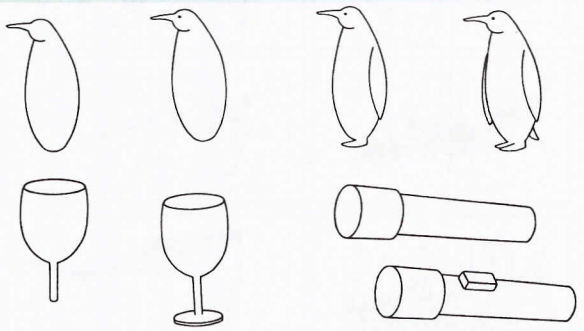


Figure 14.3 Complete and partial versions of objects used in Biederman's experiment

- Error rates for 'partial' objects were extremely low, with 90 per cent accuracy even for complex objects with two-thirds of their components missing.
- So, even the simplest line drawings can be readily and correctly identified, provided the relevant geons are present. These findings are consistent with geon theory.
- Also, response times were almost as fast for partial as for complete objects, although complex complete objects were identified slightly more quickly than simple ones. This, too, is consistent with the theory: if an object's geons are simultaneously matched with stored geon descriptions, then the greater the number of such geons available, the faster the critical level needed for a 'match' will be reached.

A more stringent test is participants' ability to identify degraded versions of objects, in which the normal contours are disrupted. In a second experiment (using the same basic procedure as the first), Biederman presented stimulus objects like those shown in Figure 14.4.

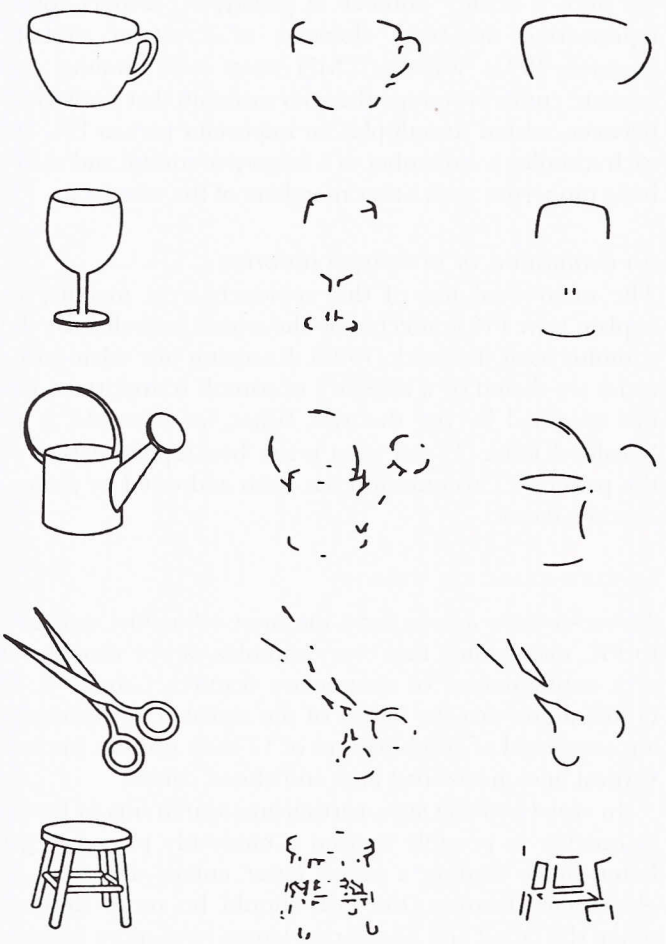


Figure 14.4 The middle column shows degraded but 'recognisable' versions; the right-hand column shows 'non-recognisable' versions

In the right-hand column, the contours have been deleted at regions of concavity. These stimuli were presented for 100, 200 or 750 m/secs, with 25, 45 or 65 per cent of their contours removed. Once again, results supported the theory.

An evaluation of geon theory

Roth (1995) believes that geons are intuitively appealing, and that they also offer a relatively flexible and comprehensive system for describing objects. Geons include a range of different shapes that can be applied not only to artefacts such as chairs, tables and houses, but also to mammals and other animals.

Although the theory makes clear predictions that can be experimentally tested (see Key Study 14.1), identification of the 36 geons and structural relationships is based

more on 'hunch' than empirical evidence. There have been *no* tests to determine whether it's *these* geons that are used in object recognition, rather than other components.

Prototype theories of PR

Prototype theories propose that instead of storing templates, we store a smaller number of *prototypes* ('abstract forms representing the basic elements of a set of stimuli': Eysenck, 1993). Whereas TMH treats each stimulus as a separate entity, prototype theories maintain that similarities between related stimuli play an important part in PR. So, each stimulus is a member of a *category* of stimuli and shares basic properties with other members of the category.

An evaluation of prototype theories

The main weakness of this approach is its inability to explain how PR is affected by the *context*, as well as by the stimulus itself (Eysenck, 1993). Knowing just what properties are shared by a category of stimuli is important, but not specified by the theories. What, for example, is an 'idealised' letter 'T' and what is the 'best representation of the pattern'? This question has been addressed by *feature-detection theories*.

Feature-detection theories

Feature-detection theories form the most influential approach to PR, maintaining that every stimulus can be thought of as a configuration of elementary features. Gibson *et al.* (1968) argue that the letters of the alphabet, for example, are composed of combinations of 12 basic features (such as vertical lines, horizontal lines and closed curves).

In *visual scanning tasks*, participants search lists of letters as quickly as possible to find a randomly placed target letter. Since finding a target letter entails detecting its elementary features, the task should be more difficult when the target and non-target letters have more features in common. This is exactly what researchers (e.g. Rabbitt, 1967) have found. Additional support comes from studies of eye movements and fixation. Presumably, the more a feature in a pattern is looked at, the more information is being extracted from it. The perception of features within complex patterns depends on higher cognitive processes (such as attention and purpose), as well as the nature of the physical stimuli being looked at.

It's also well established that the visual systems of some vertebrates contain both peripheral (retinal) and central (cortical) cells that respond only to particular features of visual stimuli. In their pioneering research, Hubel & Wiesel (1968) identified three kinds of cortical cell ('simple', 'complex' and 'hypercomplex', referring to the types of stimuli the cells respond to: see Box 5.9, page 86). More recently, it's been claimed that there are face-specific cells in the infero–temporal cortex of the monkey (Ono *et al.*, 1993: see below, page 241).

In humans, Perrett (cited in Messer, 1995) has identified cells that respond to specific aspects of a face or to a set of features. There may also be cells that respond to many different views of a face, 'summing' inputs from a variety of sources.

KEY STUDY 14.2 Eye movements reflect what you're looking for (Yarbus, 1967)

Yarbus found that when participants were shown the scene in Figure 14.5, different patterns of eye movements were recorded depending on whether they were asked to:

- examine the picture at will
- estimate the economic status of the people shown
- judge their ages
- query what they had been doing prior to the arrival of the visitor
- remember their clothing
- remember their positions (and objects in the room), or
- estimate how long since the visitor had last seen the family.

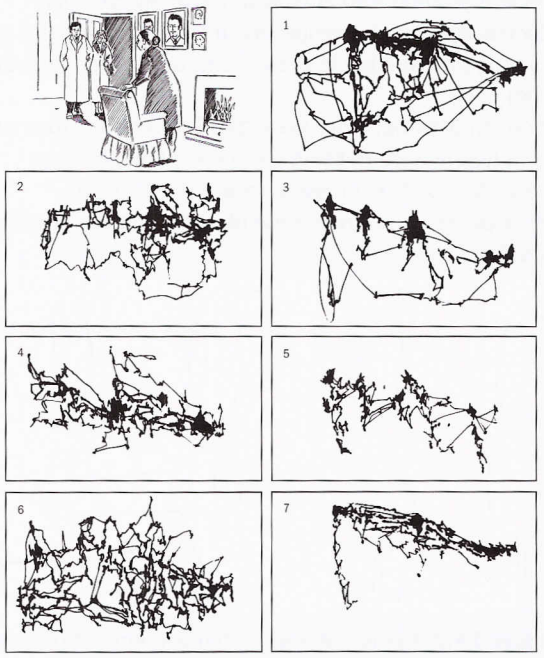


Figure 14.5 Different patterns of eye movements corresponding to different instructions

An evaluation of feature-detection theories

Whether such cells constitute the feature detectors proposed by feature-detection theories is unclear. These neurological detectors may be a necessary pre-condition for higher-level (or cognitive) pattern task analysis. However, feature-detection theories typically assume a *serial* form of processing, with feature extraction being followed by feature combination, which itself is then followed by PR (Eysenck, 1993). For example, Hubel and Wiesel saw the sequence of simple, complex and hypercomplex cells representing a serial flow of information, whereby only particular information is processed at any

one time before being passed on to the next level upwards, and so on.

The alternative and widely held view is that considerable *parallel* processing takes place in the visual cortex, and that the relationship between different kinds of cortical cell is more complex than originally believed. An early example of a non-serial processing computer program is Selfridge's (1959) *Pandemonium model.*

Box 14.1 Selfridge's (1959) Pandemonium model

Selfridge's computer program was designed to recognise Morse code and a small set of handwritten letters. The components of the model are known as *demons*, of which there are four kinds:

1. *image demons* simply copy the pattern presented (and these are analogous to the retina)
2. *feature demons* analyse the information from the image demons in terms of combinations of features
3. *cognitive demons* are specialised for particular letters and 'scream' according to how much the input from the feature demons matches their special letter
4. finally, a *decision demon* chooses the 'loudest scream' and identifies the letter (see Figure 14.6).

Although Pandemonium was never intended as a model of human perception, Groome *et al.* (1999) ask what assumptions about human perception would need to be made if it were modelled. These could then be tested against human data. One such assumption is that context would have minimal effect on PR. Feature-detection theories in general have been criticised for not taking sufficient account of the role played by *context* and *perceiver characteristics* (such as *expectations*: see Box 15.4, page 256). An ambiguous feature can produce *different* patterns, and different features can produce the *same* pattern, depending on the context.

Context can tell us what patterns are likely to be present and, hence, what to expect. Sometimes we may fail to notice the absence of something (such as a typing or printing error) because of its high predictability. The influence of context and expectation illustrates *top-down/conceptually driven processing*, while most feature-detection theories are *bottom-up/data-driven* (see theories of perception in Chapter 15). PR involves selectively attending to some aspects of the presented stimuli but not to others, aided by context. PR and selective attention are therefore closely related (Solso, 1995: see Chapter 13).

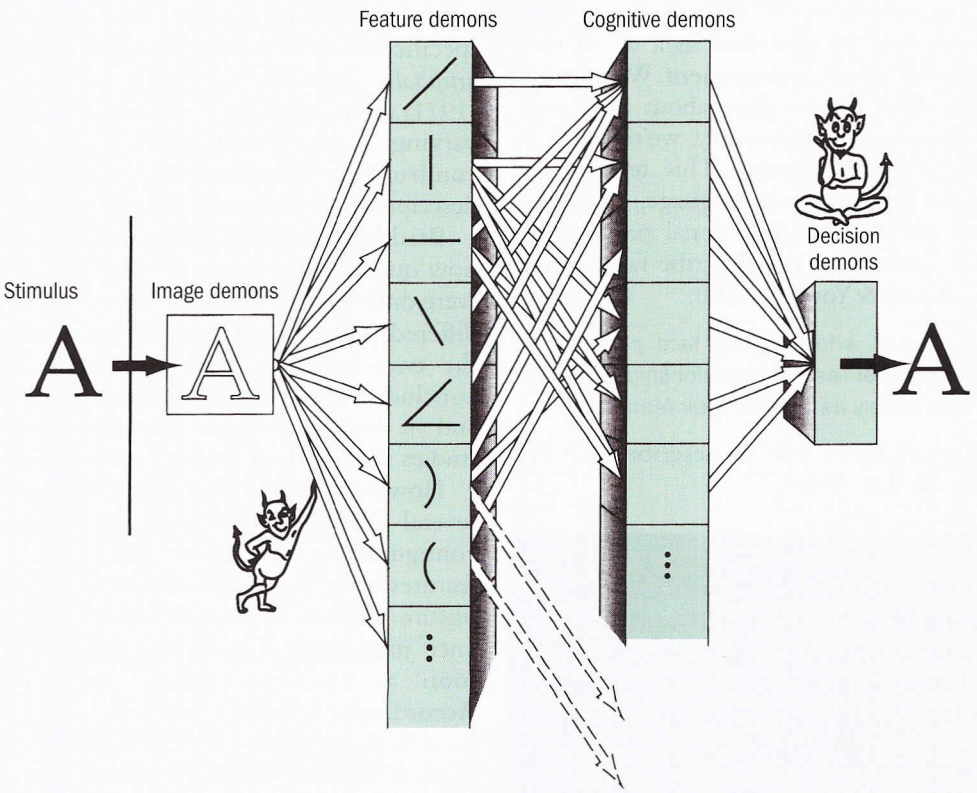


Figure 14.6 A representation of Selfridge's Pandemonium model of pattern recognition (based on Ruch, 1984)

Just as we can identify different categories of dogs or chairs, so we can identify 'baby's face', 'man's face' or, say, 'Japanese face'. We also have some ability to identify individual dogs or chairs, but in the case of human faces this ability to identify individuals is of paramount importance (Bruce, 1995). Recognising faces is probably one of the most demanding tasks that we set our visual systems. Unlike most other cases of object identification, the task is to identify one specific instance of the class of objects known as faces (Groome *et al.*, 1999).

Strictly, *face recognition* (using the face to identify an individual) is part of the broader process of *face perception* (the whole range of activities where information is derived from the face, such as inferring emotional states from facial expressions). According to Eysenck & Keane (1995), substantial recent research has provided greater knowledge about the processes involved in face recognition than about those involved in most other forms of PR.

Are faces more than the sum of their parts?

ASK YOURSELF...

- Choose a familiar face (friend, lecturer, film star) and describe it.
- What makes this face unique – that is, what enables you to recognise it as that specific face?
- What do all faces have in common?

Based on theories of basic-level PR (such as Biederman's geon theory), faces could be described as a set of parts (the features) and their spatial arrangement. When we're asked to describe a face, or speculate about how individual faces are represented in memory, we're likely to think in terms of separate features. This tendency is undoubtedly created partly by our language, which has discrete terms for the different functional parts of the face. But the *visual system* may not describe faces in this way. According to Bruce & Young (1998):

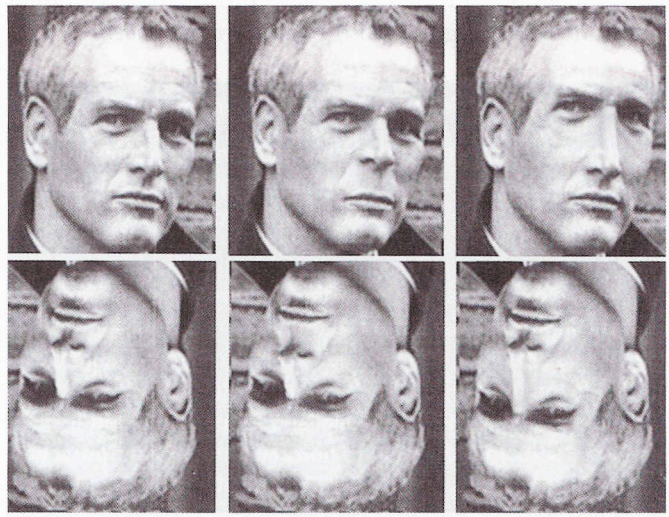
> ... there is a good deal of evidence that face patterns are treated more as wholes or as interrelationships between different features, than simply as a list of their features ...

In other words, it seems more valid to describe faces in a more *configural* way (Bruce, 1995).

Box 14.2 The meanings of 'configural'

According to Bruce (1995), although psychologists tend to agree that a face is greater than the sum of its parts, studies of face perception haven't always made explicit which sense of 'configural' is being investigated. She identifies three meanings.

1. The *spatial relationships* between features are as important as the features themselves.
2. Facial features *interact* with one another (for example, perception of mouth shape is affected by the shape of the nose).
3. Faces are processed *holistically* (they aren't analysed into separable features at all).



You should find it easy to detect which image shows the real Paul Newman, though the distortions are much easier to see in the upright than in the inverted images (from Bruce & Young 1998)

However, early research into face recognition implicitly assumed that a part-based description *might* be appropriate, comprising a list of features each with different specific values. Many psychologists during the 1970s used *artificially constructed faces*, such as Bradshaw & Wallace's (1971) use of Identikit (Figure 14.7). This refers to a set of varying line-drawn features used by the police to construct a criminal/suspect's face, based on a witness's description (see Chapter 21).

Bradshaw and Wallace presented pairs of faces to see how quickly participants decided that two faces in a pair were different as a function of the number of features that differed. They found that the *more* differences between the two faces, the *faster* participants responded. They concluded that facial features are processed *independently* and *in sequence*. Sergent (1984) reviewed several other studies that reached similar conclusions.

However, Sergent also noted that faces that differed in several features also differed more in terms of overall configuration than those differing only in a few. If features really are processed independently, the number of feature differences shouldn't affect how quickly a 'difference' judgement is made (the judgement can be made as soon as any one feature difference is spotted). Accordingly, Sergent constructed eight slightly different faces from the same 'kit' of face features, but each had one of two different *chins*, *eye colours* and arrangements of internal features (*internal space*). 'Different' pairs (one, two or three feature differences) were intermixed with pairs

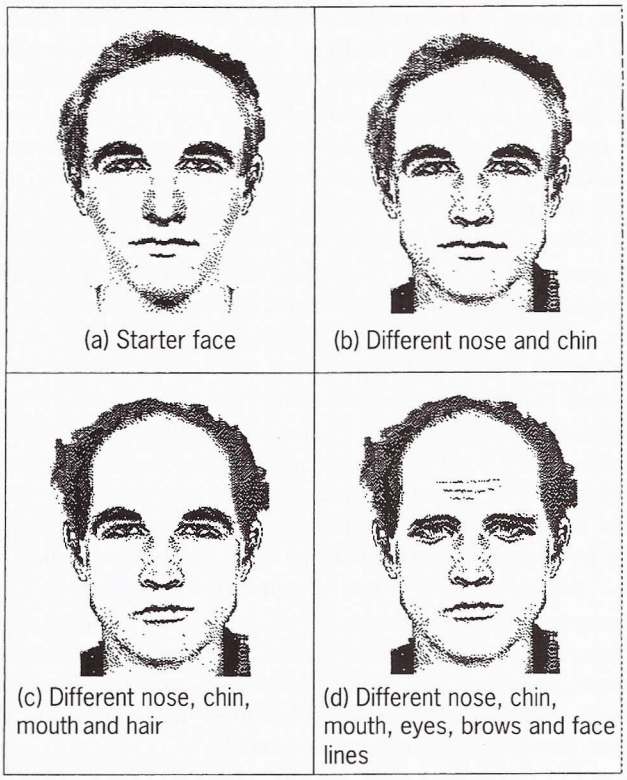


Figure 14.7 Examples of Identikit faces used in Bradshaw & Wallace's (1971) experiment

of identical faces, and participants were asked to decide whether the 'different' pairs were the same or different.

Sergent confirmed Bradshaw and Wallace's finding that the more features that differed, the faster a 'difference' decision was made. However, when only a single feature differed, 'difference' decisions were faster when this involved *chins* (and this was true for all participants). When something *in addition* to chins differed, the decisions were even faster. This latter finding suggests that there's *interactive processing* of different dimensions of facial appearance: a configuration emerges from a set of features that's more than the sum of its parts (see Box 14.2).

Are upright and inverted faces processed differently?

ASK YOURSELF...

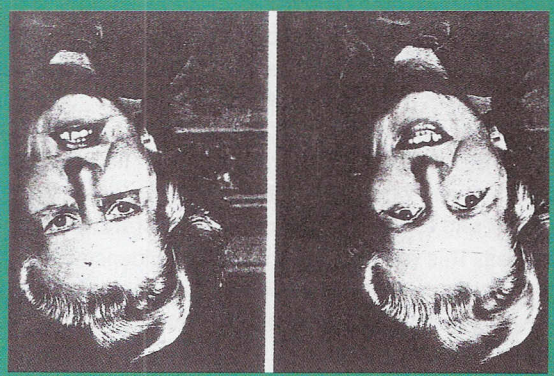
- Before reading on, look at the photographs of Margaret Thatcher (in Box 14.3).
- Describe what you see.

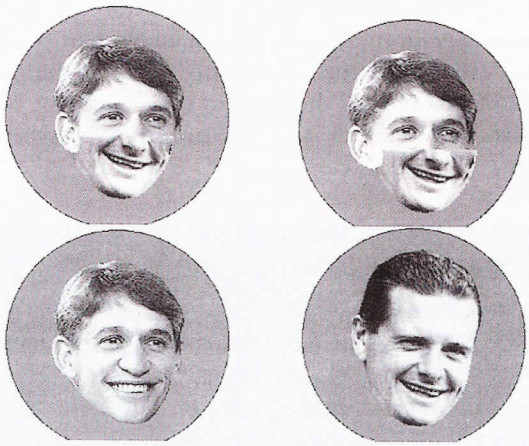
An interesting additional finding from Sergent's study was that when she repeated the experiment using *inverted* face images, the results supported the view that the face is processed as a set of *independent* features. Several other studies have confirmed this finding.

According to Bartlett & Searcy (1993), the most likely explanation of the Thatcher illusion is what they call the *configural processing hypothesis*. The relationship between the features is more difficult to perceive when the face is inverted (so the features are processed independently), and the strangeness of the grotesque face cannot be seen (since it arises from the relationship between the features).

Box 14.3 Evidence relating to differential processing of upright and inverted faces

- Tanaka & Farah (1993) found that facial features learned in the context of an *upright* normal face were more likely to be identified correctly in the context of that face (as opposed to being tested in isolation). However, this advantage wasn't found for inverted faces. They concluded that the representation of whole faces is based on a holistic description, while inverted faces (as well as houses and scrambled faces: see Chapter 16) are represented as a set of independent components.
- According to Yin (1969), while upright faces are recognised more accurately than physical objects, the reverse is true for inverted faces. Somehow, the different features in inverted faces cannot be integrated to give a coherent impression. This is one of the best established findings in the field of face recognition (Bruce, 1995).
- Young *et al.* (1987) took pictures of well-known faces and sliced them horizontally to form separate upper and lower face halves. They then paired the upper half with a 'wrong' lower half. Participants were asked to name the top halves of faces presented either in isolation or when paired with the 'wrong' lower halves. The top halves were much harder to name when combined with the wrong lower halves than when shown alone, or when the two correct halves were misaligned. Young *et al.*'s explanation was that combining the two halves produced a 'new' configuration (see the 'Gazzaker' images, page 238). Significantly, when composite faces were inverted, participants named them *more accurately* than when they were presented upright.
- In Thompson's (1980) Thatcher illusion, the eyes and mouth are cut out and inverted within the face. When viewed upright, this produces a grotesque appearance, but when inverted, it looks quite similar to the 'normal' version.





Who can you see?

If Bartlett and Searcy are correct, does this necessarily mean there's something special about face recognition? A study by Diamond & Carey (1986) of dog breeders and judges suggests that expertise may be the crucial variable. These dog experts were just as affected by the inversion of dog pictures as non-experts were by the inversion of human faces. So, configural processing might enable experts to make fine discriminations within a particular category, in which all the members share the same overall structure. When it comes to human face recognition, we all appear to be experts.

Disorders of face processing

While we might all be experts at face recognition, there are rare but dramatic cases of people who are unable to recognise familiar faces, including those of their spouses, other relatives and friends. The most common such disorder is *prosopagnosia*.

Prosopagnosia

CASE STUDY 14.1 W.J. (McNeil & Warrington, 1993)

- W.J. was a 51-year-old man who suffered a series of strokes, causing lesions in his left occipital, frontal and temporal lobes (see Chapter 4)
- When shown a set of three photographs (one famous and two unfamiliar faces), he couldn't select the famous one. However, if he was asked 'Which one is ...?', his performance improved significantly (*covert recognition*).
- Following the onset of his *prosopagnosia*, he acquired a flock of sheep which he photographed. He knew them by number and could recognise at least 8 of the 16 pictures. This represents remarkable evidence of an ability to learn to recognise individual sheep, while still being profoundly prosopagnosic for human faces (Groome *et al.*, 1999).

The case of W.J. demonstrates that prosopagnosia appears to be a face-specific deficit. Several other case studies show that patients can still identify personal possessions (including non-human animals), and can recognise faces if tested indirectly (unconscious or covert recognition: Groome *et al.*, 1999). Covert recognition suggests that prosopagnosia *isn't* a memory deficiency.

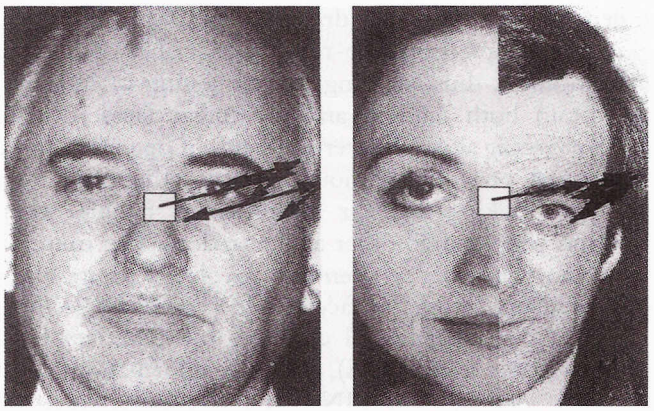
Some of these patients can derive particular kinds of *meaning* from faces (including emotional expression), despite being unable to recognise them. Conversely, some patients with a form of dementia find it difficult to recognise emotional expressions, while still being able to classify famous faces according to occupation (which requires knowledge of personal identity: Kurucz & Feldmar, 1979). The task of recognising individual identity from a face, therefore, seems to be quite separate from that of recognising an emotional expression. While the former requires recognition of an individual regardless of the expression, the latter requires recognising emotion irrespective of other aspects of facial appearance. Experiments with normal adults have shown that identity seems to be ignored when identifying emotional expressions, and expressions are identified no more quickly from familiar than from unfamiliar faces.

Unilateral neglect

We saw in Chapter 13 that people who suffer a stroke in their right parietal lobe display *left-sided neglect* (*unilateral neglect*). This usually affects perception of a wide range of objects, but in rare cases it may present as *face-specific* (as in the case of Keith: Young *et al.*, 1990). The parietal lobe is involved in attention, perception of the world's spatial layout, and especially in the visual abilities we need to control our actions (Milner & Goodale, 1996).

In evolutionary terms, the key task of vision is to construct a representation of the external environment that will permit effective actions. Many parts of the visual system are highly integrated with the mechanisms that control our movements (Bruce & Young, 1998). Unilateral neglect involves a deficit in a specific form of motor activity, namely *eye movements* (see Chapter 5). When people with left-sided neglect are shown a *chimeric*, comprising halves of two different photographs of faces joined at the midline, they often identify only the half-face falling to their *right*.

Robert (Walker *et al.*, 1996), who suffered a right-hemisphere stroke, was shown a photograph of Gorbachev (ex-President of the former USSR), and the chimeric of Anna Ford and Terry Wogan (see page 239). The white squares represent the initial fixation position on the midline before the face was actually presented. Robert's saccades went from the midline to the *right* side of each image, but after that *only* the right side was explored. Despite being warned that the stimuli would be composed of two faces joined together, he identified only Terry Wogan.



Neglect *doesn't* appear to be caused by an inability to scan the left side, but exactly what does cause this is still unclear. It most likely involves some kind of difficulty in forming an adequate representation of the face's left side, or an inability or disinclination to attend properly to it. Interestingly, neurologically normal people tend to overestimate the importance of information from the *left* side of the face (Bruce & Young, 1998).

Capgras' delusion/syndrome

Once thought to be extremely rare, *Capgras' syndrome* has been increasingly recognised and reported in recent years. Some studies suggest that it may be present in up to 4 per cent of psychotic patients (see Chapter 44), and up to a third of Alzheimer's patients may display the syndrome at some point during their illness (see Chapter 39) (Enoch & Ball, 2001). It is one of the most extensively studied forms of *delusional misidentification*.

It involves the belief that one or more close relatives have been replaced by near-identical imposters. Cases have been found in many cultures, and show a consistent pattern. Patients can be otherwise rational and lucid, and able to appreciate that they're making an extraordinary claim (Bruce & Young, 1998).

CASE STUDY 14.2 Arthur (Ramachandran, 1998)

- Arthur had been in a near-fatal car accident and lay in a coma for three weeks. When he finally awoke, he seemed restored to his former self, except for this one incredible delusion about his parents – they were imposters. Nothing could convince him otherwise.
- Ramachandran asked him, 'Arthur, who brought you to the hospital?'

  'That guy in the waiting room,' Arthur replied. 'He's the old gentleman who's been taking care of me.'

  'You mean your father?'

  'No, no, doctor. That guy isn't my father. He just looks like him. But I don't think he means any harm.'

  'Arthur, why do you think he's an imposter? What gives you that impression?'

  '... Maybe my real father employed him to take care of me, paid him some money so that he could pay my bills.'
- Arthur's parents revealed that he didn't treat them as imposters when they spoke to him on the phone, but only in face-to-face encounters. This implied that Arthur wasn't amnesic regarding his parents, and that he wasn't simply 'crazy'.

It was originally thought that Capgras' syndrome was based on prosopagnosia – either alone or in combination with a psychotic state. But patients with prosopagnosia don't become deluded over their disorder (they recognise their problem), and they search for similarities, while Capgras patients look for dissimilarities. The key difference is that Capgras can occur in a person who is blind (Enoch & Ball, 2001).

Models of face recognition

According to Bruce (1995), the complete identification of a known face requires not just that we recognise the pattern of the face as a familiar one, but that we know the context in which we've encountered the person and can retrieve his/her name. Studies of both normal and brain-damaged people suggest that there's a sequence of distinct stages involved in retrieving someone's identity. Failures at each stage are characterised by different problems of identification.

Hay & Young (1982) were the first to outline a stage model, which was supported by the pattern of errors reported by Young *et al.* (1985) in their diary study of everyday failures in person identification. On the basis of their data, Young *et al.* proposed a model of the functional components involved in person identification.

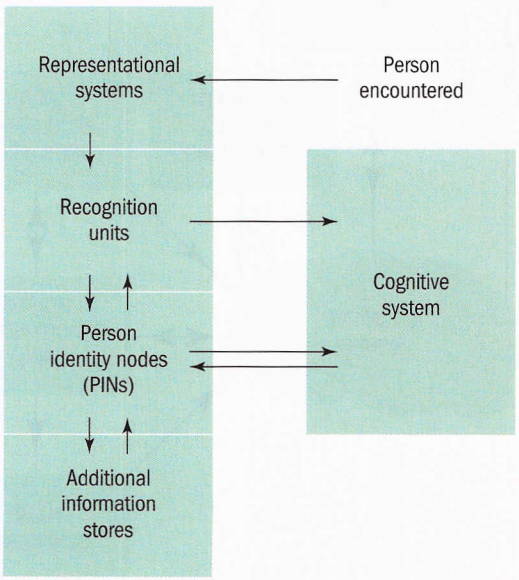


Figure 14.8 Young *et al.*'s (1985) model of the functional components involved in person identification

After representational processing, information about the face of the person encountered is processed by *recognition units*. These contain stored representations of known faces. If the currently viewed face matches one of these representations, information about the resemblance is signalled to *person identity nodes* (PINs). Basic information about personal identity is stored in the PINs, via which names and other details are accessed (from the *additional information stores*). Decisions as to whether or not a particular face is familiar, or about the person's identity, are made as a result of communication between these levels and the *cognitive system*.

This model was revised by Bruce & Young (1986). The stages of person identification are now put into the broader context of their relationship with the other uses made of facial information. The model comprises several different processing 'modules' linked in sequence or in parallel.

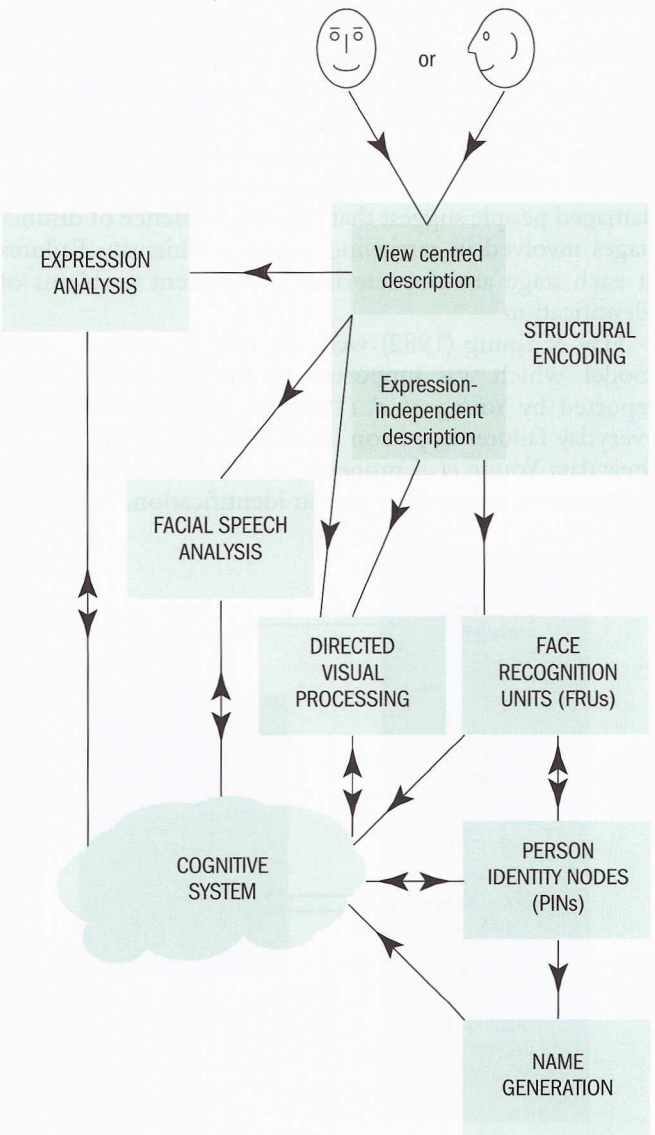


Figure 14.9 Bruce & Young's (1986) functional model for face recognition

Independent routes are drawn for the processing of emotional expressions, lip-reading ('facial speech') and identification, thus allowing the processing of information from both familiar and unfamiliar faces. *Directed visual processing* allows for certain kinds of operation to be performed on faces without accessing their identities (such as looking out for white-haired people when meeting your grandmother at the station). The route by which familiar faces are identified involves separate stages of representation of the face image (*structural encodings*), access of stored structural descriptions of known faces (*face recognition units*/FRUs), access of information about personal identity (via PINs) and, finally, retrieval of proper names.

An evaluation of the Bruce & Young (1986) model

According to Groome *et al.* (1999), the *dissociation* between processing of emotional expression and person identification makes good sense. We need to be able to recognise a face irrespective of its expression, and vice versa. Despite the fact that the model is broad, Bruce (1995) believes that it has the strength of being falsifiable.

Some relevant experimental evidence comes in the form of the *tip-of-the-tongue* (TOT) *phenomenon* for people's names (see Key Study 17.10, page 301). Brennen *et al.* (1990) wanted to know if participants in a TOT state, after being asked to identify someone from a description, could be helped to retrieve the name by viewing a picture of the person or by being given the initials of the missing name. Providing the initials allowed about half the missing names to be retrieved, but pictures produced just as little success as simply repeating the questions. These results are consistent with Bruce and Young's model. In a TOT state, participants must be at the stage of PINs, but are unable to reach the next stage of name retrieval. Seeing the face shouldn't help, since there's no direct link between faces and names; but the initials provide partial cues to help name retrieval.

However, evidence of *covert recognition* in prosopagnosic patients (see Case Study 14.1) are difficult for the model to explain. Familiarity judgements are supposedly made on the basis of activation levels at FRUs, forming an early stage in the sequence of establishing the person's full identity. If patients consistently fail to make familiarity judgements at better than chance levels, they should be unable to access information from later ('deeper') levels (stages) in the system. Yet this is exactly what covert recognition entails. Partly as an attempt to overcome these difficulties, the model was revised and extended by Burton *et al.* (1990) and Bruce (1992: see Bruce, 1995).

Face recognition and the brain

Given that face perception is such a demanding perceptual task, it's not surprising that brain damage can result in deficits in face processing, such as prosopagnosia (Groome *et al.*, 1999). According to Young & Bruce (1998):

Because faces are of such fundamental social importance to a creature that lives in a complex society, extensive areas of the brain are involved in their perception.

The functions of these areas are being revealed in studies of the effects of different types of brain injury, and using modern neuro-imaging techniques to study face processing in the normal brain (see Chapter 4). The brain seems to 'farm out' different aspects of the task to different specialised areas. For example, some regions are more closely involved in determining an individual's identity from their facial appearance, and others in interpretation of facial expressions of emotion (Young *et al.*, 1993).

According to Ellis & Young (1990), when we look at the faces of people we know, we recognise who they are and parts of our brains set up preparatory emotional responses for the types of interaction that are likely to follow (the *orienting response*). Recognising *who* it is, and preparing for *what* you're likely to do (the orienting response) involve *separate* neurological pathways. If the pathway responsible for the orienting response is damaged, and the orienting response is impaired, faces that can still be recognised (and so look familiar) can somehow seem strange (because they don't elicit the usual reactions).

The *temporal lobes* contain regions that specialise in face and object recognition (the '*what pathway*'). Normally, these face recognition areas relay information to the *limbic system* (specifically, the *amygdala*), which then helps to generate emotional responses to particular faces. For example, our GSR increases when we see someone familiar (or just see their photograph), but we'd expect this *not* to happen in the case of Capgras' patients. This was confirmed by Ramachandran (1998) in the case of Arthur (see Case Study 14.2). The discrepancy between recognition and the emotional response (there is none) produces a highly disturbing sense of strangeness. The belief that parents, say, are imposters (the delusion) might simply be a *rationalisation* of that disturbing experience (Bruce & Young, 1998; Young & Bruce, 1998).

CHAPTER SUMMARY

- **Pattern recognition** (PR) is the process of assigning meaning to visual input by identifying the objects in the visual field. Like perception, with which it's almost synonymous, PR is a deceptively simple process.
- According to the **template matching hypothesis** (TMH), incoming sensory information is matched against miniature copies (or templates) of patterns/objects stored in long-term memory. However, TMH fails to account for our ability to recognise unfamiliar patterns.
- Biederman's **geon theory** (or **recognition-by-components model**) tries to overcome TMH's limitations. Descriptions of objects usually divide them into **volumetric concepts** or **geons**, and the regions used to divide them up are probably those of greatest **concavity**.
- Geon theory has been supported by experiments using 'partial' objects. A more stringent test involves the use of 'degraded' versions of objects. Again, the results tend to support the theory. While geons are intuitively appealing, there's little empirical support for the specific geons Biederman identifies.
- **Prototype theories** claim that what's stored is a small number of prototypes. Instead of treating every stimulus as a separate entity, prototype theories regard each stimulus as belonging to a **category** of stimuli. This approach fails to take account of **context**.
- **Feature-detection theories** are the most influential approach to PR. Every stimulus can be regarded as a configuration of elementary features. **Visual scanning tasks** and studies of **eye movements/fixations** support feature-detection theories. The latter also show that the perception of features within complex patterns depends on attention and purpose.
- Hubel and Wiesel identified three kinds of **cortical cell**, which may or may not be the feature detectors proposed by feature-detection theories. There may be face-specific cells in the monkey cortex, and there also appear to be cells in the human cortex that respond to specific aspects of faces.
- While feature-detection theories typically assume a **serial** form of processing, it's widely believed that the visual cortex involves considerable **parallel** processing.
- Selfridge's **Pandemonium** computer program used parallel processing. Although not intended as a model of human perception, Pandemonium shares with other feature-detection theories the neglect of **context** and **perceiver characteristics** as influences on PR.
- Most feature-detection theories are **bottom-up/data-driven**, while the influence of context and expectations illustrates **top-down/conceptually driven processing**.
- **Face recognition** involves the identification of individual faces. It's part of face perception, which includes inferring emotional states and other information from the face. Probably more is understood about face recognition than about any other aspect of PR.
- Although faces could be described in terms of basic components, it seems more valid to describe them in a more **configural** way. However, this can refer to different things, including the **interaction** between features and the **holistic** processing of the whole face.
- Early research often used **artificially constructed faces**, such as Identikit faces, and indicated that facial features are processed independently and in sequence. However, some features (such as chins) seemed to influence facial judgements more than others, and there was evidence of **interactive processing**.

- According to the **configural processing hypothesis**, the relationship between the features is more difficult to perceive when the face is **inverted** (they are processed **independently**). In a normal upright face, the configuration of the features is crucial.
- Patients with **prosopagnosia** are unable to recognise familiar faces, despite an otherwise normal capacity for recognising individual objects or animals. However, they often display **covert** (unconscious) **recognition**.
- Studies involving prosopagnosics, patients with other face-perception disorders, and normal adults also suggest that recognising individual identity is quite separate from recognising emotional expression.
- In Bruce and Young's **model of face recognition**, several different processing 'modules' are linked in sequence or in parallel, including **face recognition units** (FRUs) and **person identity nodes** (PINs).
- While there's experimental support for this model (such as the TOT phenomenon for people's faces), it has difficulty explaining covert recognition in prosopagnosic patients.
- Studies of brain damage, and neuro-imaging studies of the normal brain, suggest that different areas of the brain are specialised for different aspects of face recognition. In **Capgras' delusion**, the normal integration of face recognition and orienting response appears to be impaired.

Links with other topics/chapters

- PR is almost synonymous with *perception*, and theories of perception can be thought of as trying to account for PR (Chapter 15).
- The three kinds of *cortical cell* that respond to different features of *visual stimuli* (identified by Hubel and Wiesel) may be the feature detectors proposed by feature-detection theories (Chapter 5).
- The *serial processing* proposed by feature-detection theories contrasts with the *parallel processing* thought to take place in the visual cortex. This distinction is also relevant to the debate about *artificial intelligence* (AI) (Chapter 20).
- A major limitation of feature-detection theories in general is their failure to take account of the role of *context*, and *perceiver characteristics* (such as *expectations*) (Chapter 15).
- Early research into face recognition assumed that faces could be analysed into individual features, as in Bradshaw and Wallace's *Identikit*, used by the police to construct a suspect's face based on witnesses' descriptions (Chapter 21).
- People who suffer strokes in the right parietal lobe display left-sided neglect (*unilateral neglect*) (Chapter 13), which involves a deficit in *eye movements* (which normally ensure that we scan the whole picture) (Chapter 5).
- Capgras' syndrome is found in about 4 per cent of *psychotics* (Chapter 44) and up to a third of *Alzheimer's patients* (Chapter 39).
- In Capgras' syndrome there seems to be a breakdown in communication between areas in the *temporal lobe* (concerned with object/face recognition) and the *amygdala* (part of the limbic system), which helps generate emotional responses (Chapter 4).
- Relevant to evaluating Bruce and Young's functional model of face recognition is the *tip-of-the-tongue* (TOT) *phenomenon* (Chapter 17).

Gestalt psychology and perceptual organisation
- Form perception
  - *Figure and ground*
- Grouping
- An evaluation of the Gestalt contribution
  - *Does the global always predominate?*

Depth perception
- Non-pictorial (primary) cues
- Pictorial (secondary) cues

Perceptual constancy
- Size constancy
- Shape constancy
- Location constancy
- Brightness constancy
- Colour constancy

Illusions
- Distortions
- Ambiguous figures
- Paradoxical figures
- Fictions
- Illusions of movement
- Illusions of shading

Perception of real movement
- The importance of eye movements
- Configurational change
  - *So how does the brain do it?*

Theories of visual perception
- Classifying theories
- Gregory's constructivist theory
  - *Gregory's theory and perceptual constancies*
  - *Gregory's theory and illusions*
  - *Misapplied size constancy theory*
  - *Gregory's theory and perceptual set*
  - *An evaluation of Gregory's theory of perception*
- Gibson's theory of direct perception
  - *Optic flow patterns*
  - *Texture gradients*
  - *Affordances*
  - *An evaluation of Gibson's theory*
- A possible synthesis of Gregory's and Gibson's theories
  - *Similarities*
  - *Differences*
- Marr's computational theory of vision
  - *3-D model representation and object recognition*
  - *Evaluation of Marr's theory*

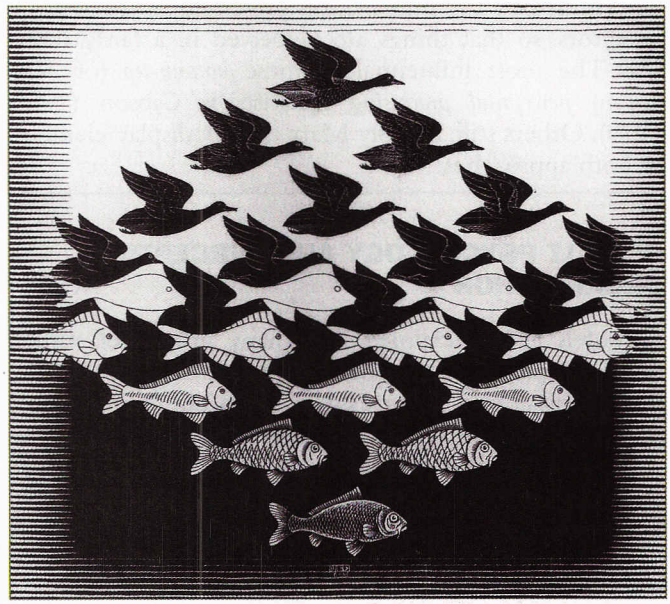
Conclusions

Chapter summary

Links with other topics/chapters

15

PERCEPTION: PROCESSES AND THEORIES



INTRODUCTION AND OVERVIEW

When we compare our experience of the world (in which objects remain stable and constant) with what our sense organs receive in the form of physical stimulation (a state of near-continuous flux), it's almost as if there are two entirely different 'worlds'. Psychologists call these *sensation* and *perception* respectively. Sensations are the experiences that physical stimuli elicit in the sense organs (see Chapter 5). Perception is the organisation and interpretation of incoming sensory information to form inner representations of the external world.

This chapter begins by looking at some basic visual perceptual phenomena, namely, form and depth perception, perceptual constancy and visual illusions. Many of the principles that govern human visual perception were first identified by the German 'school' of Gestalt psychology. As Dodwell (1995) has observed:

> To perceive seems effortless. To understand perception is nevertheless a great challenge.

One response to this challenge claims that our perception of the world is the end result of a process which also involves making inferences about what things are like. Those who subscribe to this 'end result' view, such as Bruner (1957), Neisser (1967) and Gregory (1972, 1980), are called *top-down* (or *conceptually driven*) *perceptual processing* theorists. Making inferences about what things are like means that we perceive them *indirectly*, drawing on our knowledge and expectations of the world. Others argue that our perception of the world is essentially determined by the information presented to the sensory receptors, so that things are perceived in a fairly direct way. The most influential of these *bottom-up* (or *data-driven*) *perceptual processing* theorists is Gibson (1966, 1979). Others still, notably Marr (1982), display elements of both approaches.

GESTALT PSYCHOLOGY AND PERCEPTUAL ORGANISATION

Ehrenfels (1890) claimed that many groups of stimuli acquire a pattern quality that is greater than the sum of their parts. A square, for example, is more than a simple assembly of lines – it has 'squareness'. Ehrenfels called this 'emergent property' *Gestalt qualität* (or form quality). In the early 1900s, Gestalt psychologists (notably Wertheimer, Koffka and Köhler) attempted to discover the principles through which sensory information is interpreted. They argued that as well as creating a coherent perceptual experience that's more than the sum of its parts, the brain does this in regular and predictable ways. They believed that these organisational principles are largely *innate* (see Chapter 16).

Form perception

In order to structure incoming sensory information, we must perceive objects as being separate from other stimuli and as having meaningful form.

Figure and ground

> ***ASK YOURSELF...***
> - What do you see in Figure 15.1?
> - Although it's visually quite simple, can you suggest how it might illustrate a basic principle of how we see things?

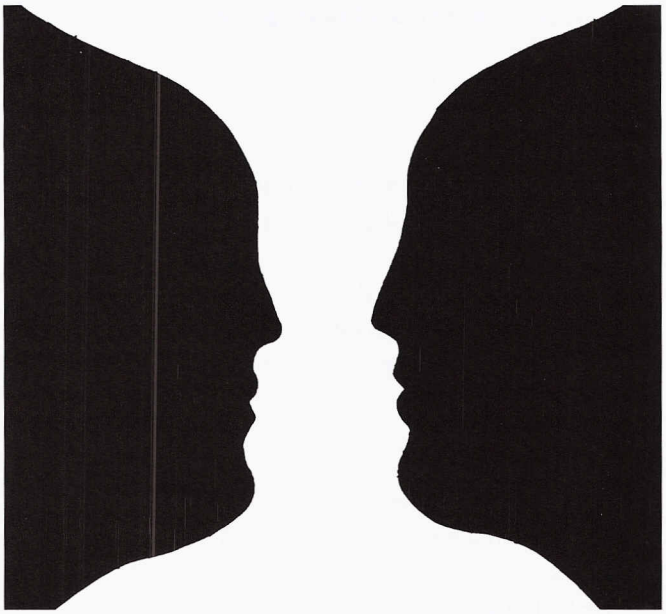


Figure 15.1

The first perceptual task when confronted with an object (or *figure*) is to recognise it (see Chapter 14). To do this, we must perceive the figure as being distinct from its surroundings (or *ground*). A figure's familiarity can help determine whether it's perceived as figure or ground, but unfamiliar and even meaningless 'blobs' are also seen as figures. One of the strongest determinants of figure and ground is *surroundedness*. Areas enclosed by a contour are generally seen as figures, whereas the surrounding area is generally seen as ground. Size, orientation and symmetry also play a role in figure–ground separation.

Sometimes, though, there may not be enough information in a pattern to allow us to distinguish easily between figure and ground. A good example of this is shown in Figure 15.2 (see below), which illustrates the principle underlying camouflage.



Figure 15.2 The dalmatian dog (the figure) is difficult to distinguish from the ground because it has few visible contours of its own

In *figure–ground reversal*, a figure may have clear contours, but is capable of being perceived in two very different ways: it's unclear which part of it is the figure and which the ground. A famous example is Figure 15.1, usually called Rubin's vase (Rubin, 1915). Here, the figure–ground relationship continually reverses, so that it's perceived as either a white vase with a black background, or two black profiles on a white background. However, the stimulus is always organised into a figure seen against a ground, and the reversal indicates that the same stimulus can trigger more than one perception.

The picture at the beginning of this chapter (page 243) shows how the artist Escher used figure–ground reversal.

ASK YOURSELF...

- Can you think of some 'everyday' examples of figure–ground (reversible or not)?
- Can you think of some non-visual examples?

A map is another example. We normally see the land as figure and the sea as (back)ground, because we're more familiar with the shape of Africa, say, than with the shape of the Atlantic ocean. An auditory example is the *cocktail party phenomenon* (see Chapter 13). Here's another: try repeating 'over-run' out loud and you'll find the two words alternating as figure and ground.

Grouping

Once we've discriminated figure from ground, the figure can be organised into a meaningful form. Gestalt psychologists believed that objects are perceived as *Gestalten* ('organised wholes', 'configurations' or 'patterns') rather than combinations of isolated sensations. They identified several 'laws' of perceptual organisation or grouping, which illustrate their view that the perceived whole of an object is more than the sum of its parts.

These laws can be summarised under one heading, the *law of prägnanz* ('precision'), according to which:

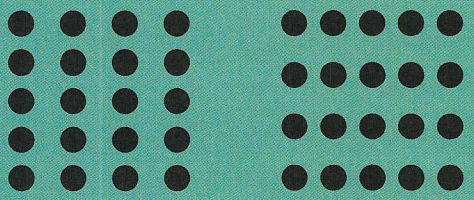
> Psychological organisation will always be as good as the prevailing conditions allow. In this definition, 'good' is undefined. (Koffka, 1935)

'Good' can be defined as possessing a high degree of *internal redundancy*, that is, the structure of an unseen part is highly predictable from the visible parts (Attneave, 1954). Similarly, according to Hochberg's (1978) *minimum principle*, if there's more than one way of organising a given visual stimulus, we're most likely to perceive the one requiring the least amount of information to perceive it.

In practice, the 'best' way of perceiving is to see things as symmetrical, uniform and stable, and this is achieved by following the laws of prägnanz.

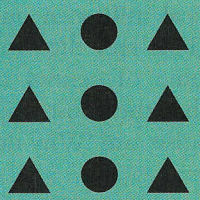
Box 15.1 Gestalt laws of perception

Proximity: Elements appearing close together in space or time tend to be perceived together, so that different spacings of dots produce four vertical lines or four horizontal lines:



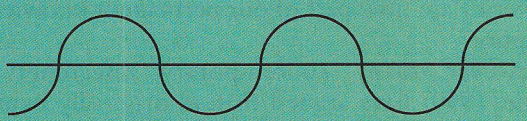
An auditory example would be the perception of a series of musical notes as a melody, because they occur soon after one another in time.

Similarity: Similar figures tend to be grouped together. So, the triangles and circles below are seen as columns of similar shapes rather than rows of dissimilar shapes.



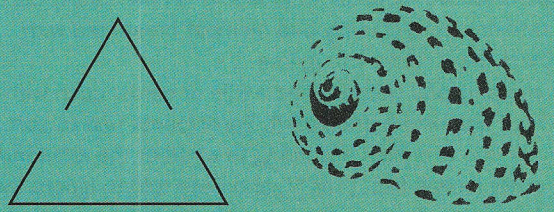
Hearing all the separate voices in a choir as an entity illustrates the principle of similarity.

Continuity: We tend to perceive smooth, continuous patterns rather than discontinuous ones. The pattern below could be seen as a series of alternating semi-circles, but tends to be perceived as a wavy line and a straight line.



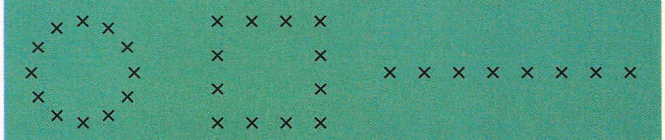
Music and speech are perceived as continuous, rather than a series of separate sounds.

Closure: Closed figures are perceived more easily than open/incomplete ones. So, we often supply missing information to close a figure and separate it from its background. By filling in the gaps, the illustrations below are seen as a triangle and a seashell.



Part–whole relationship: As well as illustrating continuity and proximity, the three figures below illustrate the principle that 'the whole is greater than the sum of its parts'.

Despite the similarity of the parts (each pattern is composed of twelve crosses), the Gestalten are different.



The same melody can be recognised when hummed, whistled or played with different instruments and in different keys.

Common fate: Elements seen moving together are perceived as belonging together. This is why a group of people running in the same direction appear to be unified in their purpose.

An evaluation of the Gestalt contribution

A major philosophical influence on Gestalt psychology was *phenomenology*. This sees the world as we ordinarily experience it as being of central concern. Koffka, for example, believed that the most important question for perceptual psychologists was 'Why do things look as they do?', and for Köhler:

> There seems to be a single starting point for psychology, exactly as for all the other sciences: the world as we find it, naïvely and uncritically.

The most comprehensive account of perceptual grouping is still that provided by the Gestaltist psychologists (Roth, 1986), and in Gordon's (1989) view, Gestalt psychology's discoveries 'are now part of our permanent knowledge of perception'.

However, many contemporary researchers (e.g. Greene, 1990) have argued that, as originally expressed, the various Gestalt 'laws' are at best only descriptive and at worst extremely imprecise and difficult to measure. Several studies have attempted to address the various criticisms made of the Gestalt laws.

KEY STUDY 15.1 Trying to ignore what comes naturally (Pomerantz & Garner, 1973)

- One objective measure of grouping is how quickly participants can sort/classify one element presented with others they must try to ignore.
- Pomerantz and Garner used a pile of cards, each with a pair of brackets printed on it. Participants had to sort the cards into two piles according to whether the *left-hand bracket* looked like '(' or ')', and were told to ignore the right-hand bracket completely.
- In one condition, the pairs of brackets were identified as *groupable*, in the other condition, as *non-groupable*. (As Figure 15.3 shows, there was an experimental and a control pack in each condition.)
- Pomerantz and Garner predicted that reaction times for the groupable cards would be *longer* than for the non-groupable, and this is what they found. Participants were having to select out one element of the pair, and this takes time.
- Pomerantz & Schwaitzberg (1975) systematically manipulated proximity by using cards with brackets drawn further and further apart. Given a suitable distance between the brackets, grouping effects disappeared: there was no longer a difference in sorting times between the control and experimental packs of 'groupable' stimuli.

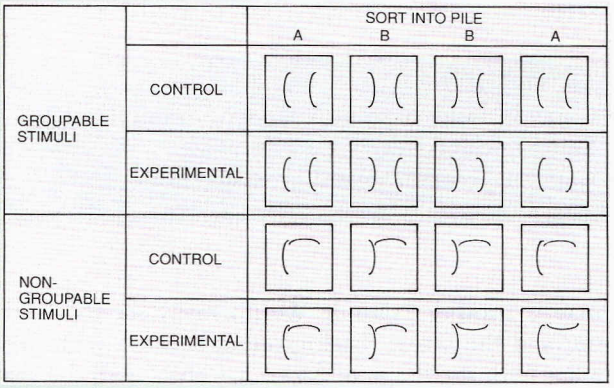


Figure 15.3 Pomerantz & Garner's (1973) experimental test of Gestalt laws

Navon (1977) tested the idea that the whole is perceived before the parts that make it up by presenting participants with various stimuli, as shown in Figure 15.4.

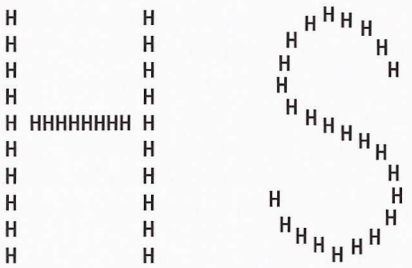


Figure 15.4

Navon distinguished between the global (or 'whole-like' features of a stimulus) and the local (or more specific and 'part-like' features). Each stimulus consisted of a large (global) letter made up of many small (local) letters. In some cases, the global and local letters matched (as shown in the stimulus on the left), and in some cases they didn't (as shown on the right).

Participants had to identify either the large or the small letter as quickly as possible. Navon found that the time taken to identify the large letter was unaffected by whether the small letters matched or not. However, the

time taken to identify the small letters was affected by whether the large letter matched or not: when the large letter was different, response times were longer. This suggests that it's difficult to avoid processing the whole, and that global processing necessarily occurs before any more detailed perceptual analysis.

Table 15.1 Decision time for global and local letters under match or mismatch conditions (based on Navon, 1977)
Time in m/secs to respond to 'global' and 'local'

Condition	Match	Mismatch
Global	471	477
Local	581	664

Does the global always predominate?

The findings from Pomerantz and Garner's, and Navon's experiments clearly support Gestalt laws. But these are difficult to apply to the perception of solid (three-dimensional/3-D) objects (as opposed to two-dimensional/2-D drawings). Our eyes evolved to see 3-D objects, and when 3-D arrays have been studied, Gestalt laws haven't been consistently upheld (Eysenck, 1993). The world around us comprises 'whole' scenes, in which single objects are but 'parts' (Humphreys & Riddoch, 1987). Because many of the Gestalt displays involve single objects, they have very low ecological validity, that is, they're not representative of 'the objects and events which organisms must deal with in order to survive' (Gordon, 1989).

Factors such as the sizes of the local and global features, the viewing conditions, and the nature of the observer's task are all likely to play a part in determining the role played by individual features in pattern recognition (Eysenck & Keane, 1990). In everyday life, it's obviously easier sometimes to process 'forests' and sometimes easier to process 'trees' (Roth, 1986).

Some theorists (e.g. Palmer, 1975) have suggested that under most circumstances, the interpretation of parts and wholes takes place in top-down and bottom-up directions simultaneously, such as in the recognition of parts of a face with and without context. As shown in Figure 15.5, the features that can easily be recognised in context are somewhat ambiguous when seen alone (out of context). But they're recognisable when more detail is provided.

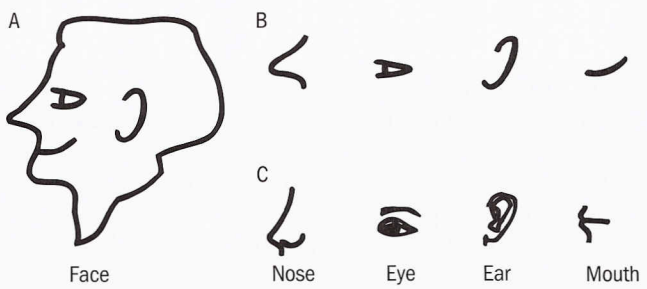


Figure 15.5 The features that can easily be recognised in context (A) are rather ambiguous when seen alone – out of context (B), although recognisable when more detail is provided (C) (based on Palmer, 1975)

(Compare Palmer's approach with that of Neisser's analysis-by-synthesis model: see Box 15.5, page 259.)

Marr (1976) found the Gestalt principles useful in achieving accurate *segmentation*, that is, how visual information is used to decide which regions of a visual scene belong together and form coherent structures. He devised a computer program aimed at achieving segmentation (of a teddy bear, for example) using the Gestalt principles. He succeeded in obtaining appropriate segmentation of the teddy's outline, eyes and nose. But some scenes are ambiguous and require using knowledge about objects in order to achieve segmentation (such as two leaves overlapping substantially in a bowl of flowers: Marr, 1982).

DEPTH PERCEPTION

From the 2-D images that fall on our retinas, we manage to organise 3-D perceptions. This ability is called *depth perception*, and it allows us to estimate an object's distance from us. Some of the cues used to transform 2-D retinal images into 3-D perceptions involve both eyes and rely on their working together. These are called *binocular cues*. *Monocular cues* are available to each eye separately.

ASK YOURSELF...
- How do we judge the distance of objects from us?
- Is it always done unconsciously, or do we sometimes try to 'work it out' consciously?

Non-pictorial (primary) cues

Most preyed-upon non-humans (such as rabbits) have their eyes on the sides of the head, allowing them to see danger approaching over a wide area. Most predators (such as lions) have their eyes set close together on the front of the head, equipping them with binocular vision, which helps in hunting prey. Like non-human predators, humans have predatory vision, which influences the way we perceive the world. Four important non-pictorial cues are *retinal disparity*, *stereopsis*, *accommodation* and *convergence*. These are all binocular, except accommodation.

◎ Because our eyes are nearly three inches apart, each retina receives a slightly different image of the world. The amount of *retinal disparity* (the difference between the two images) detected by the brain provides an important cue to distance.

ASK YOURSELF...
- Hold your finger directly in front of your nose.
- The difference between the two retinal images is large (and this can be shown by looking at your finger first with the left eye closed and then with the right eye closed).
- When the finger is held at arm's length, retinal disparity is much smaller.

- Ordinarily, we don't see double images, because the brain combines the two images in a process called *stereopsis* (literally, 'solid vision': Harris, 1998). This allows us to experience one 3-D sensation, rather than two different images.
- In *accommodation*, which is a muscular cue, the lens of the eye changes shape when we focus on an object, thickening for nearby objects and flattening for distant objects (see Figure 5.3, page 81).
- *Convergence*, another muscular cue to distance, is the process by which the eyes point more and more inward as an object gets closer. By noting the angle of convergence, the brain provides us with depth information over distances from about 6 to 20 feet (Hochberg, 1971).

Pictorial (secondary) cues

Except with relatively near objects, each eye receives a very similar retinal image when looking ahead. At greater distances, we depend on pictorial cues. These refer to features of the visual field itself (rather than to the eyes), and are all also monocular (see Table 15.2).

Table 15.2 Some pictorial depth cues

Depth cue	Description
Relative size	In an array of different sized objects, smaller ones are usually seen as more distant (especially if they're known to have a constant size).
Relative brightness	Brighter objects normally appear to be nearer.
Superimposition (or overlap)	An object which blocks the view of another is seen as being nearer.
Linear perspective	Parallel lines (e.g. railway tracks) appear to converge as they recede into the distance.
Aerial perspective	Objects at a great distance appear to have a different colour (e.g. the hazy, bluish, tint of distant mountains).
Height in the horizontal plane	When looking across a flat expanse (e.g. the sea), objects that are more distant seem higher (closer to the horizon) than nearer objects, which seem lower (closer to the ground).
Light and shadow	3-D objects produce variations in light and shade (for example, we normally assume that light comes from above).
Texture gradient	Textured surfaces (e.g. sand) look rougher close up than from a distance. A stretch of beach looks more smooth and uniform.
Motion parallax	This is the major *dynamic* depth cue (pictorial/non-pictorial). Objects nearer to us seem to move faster than more distant objects (e.g. telegraph poles seen from a (moving) train window flash by when close to the track).



Linear perspective

PERCEPTUAL CONSTANCY

Having perceived an object as a coherent form and located it in space, we must next recognise the object without being 'fooled' by changes in its size, shape, location, brightness and colour. The ability to perceive an object as unchanging, despite changes in the sensory information that reaches our eyes, is called *perceptual constancy*.

Size constancy

The image on the retina of an average-height person would be the same size for a dwarf seen from close up or a giant viewed from a distance (Ramachandran & Rogers-Ramachandran, 2004). *Size constancy* occurs because the perceptual system takes into account an object's distance from the perceiver. So, perceived size is equal to retinal image size taking distance into account.

The perception of an *after-image* demonstrates how distance can be varied without changing the retinal image's size.

ASK YOURSELF...

- Stare at a bright light for a few seconds, and then look away.
- You'll experience an after-image. This has a fixed size, shape and position on the retina.
- Now quickly look at a nearby object, and then an object further away.
- The after-image seems to shrink and swell, appearing to be largest when you look at a more distant object.

Real objects cast smaller images the further away they are, and to maintain perceptual constancy the brain 'scales up' the image (*constancy scaling*). The same constancy scaling is applied to an after-image, producing changes in its apparent size.

Shape constancy

We often view objects from angles at which their 'true' shapes aren't reflected in the retinal image they project. For example, rectangular doors often project trapezoid shapes and round cups often project elliptical-shaped images. Just as with size constancy, the perceptual system maintains constancy in terms of shape.

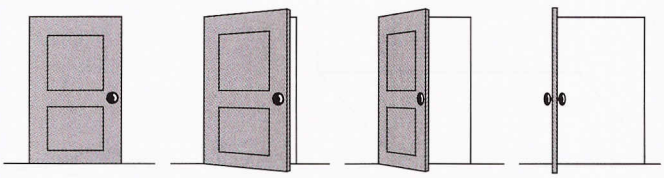


Figure 15.6 No matter what angle a door is viewed from, it remains a door

However, shape and size constancy don't always work. When we look down at people from the top of a very tall building, they do look more like ants to us, even though we *know* they're people.

Location constancy

Moving our heads around produces a constantly changing pattern of retinal images. However, we don't perceive the world as spinning around. This is because *kinaesthetic feedback* from the muscles and balance organs in the ear are integrated with the changing retinal stimulation in the brain to inhibit perception of movement (see Chapter 5). To keep the world from moving crazily every time we move our eyes, the brain subtracts the eye-movement commands from the resulting changes on the retina. This helps to keep objects in a constant location.

Brightness constancy

We see objects as having a more or less constant brightness, even though the amount of light they reflect changes according to the level of illumination. For example, white paper reflects 90 per cent of light falling on it, whereas black paper reflects only 10 per cent. But in bright sunlight black paper still looks black, even though it may reflect 100 times more light than does white paper indoors. Perceived brightness depends on how much light an object reflects relative to its surroundings (*relative luminance*).

ASK YOURSELF...

- View sunlit black paper through a narrow tube, so that nothing else is visible.
- It will appear greyish, because in bright sunlight it reflects a fair amount of light.
- Now view it without the tube.
- It appears black again, because it reflects much less light than the colourful objects around it.

Colour constancy

Familiar objects retain their colour (or, more correctly, their hue) under a variety of lighting conditions (including night light), provided there's sufficient contrast and shadow (see Chapter 5, page 89). However, when we don't already know an object's colour, colour constancy is less effective. If you've bought new clothes under fluorescent light without viewing them in ordinary lighting conditions, you'll probably agree.

ILLUSIONS

Although perception is usually reliable, our perceptions sometimes misrepresent the world. When our perception of an object doesn't match its true physical characteristics, we've experienced an illusion. Some illusions are due to the physical distortion of stimuli, whereas others are due to our misperception of stimuli (Coren & Girgus, 1978). An example of a physical illusion is the bent appearance of a stick when placed in water. Gregory (1983) identifies four types of perceptual illusion:

1. *distortions* (or *geometric illusions*)
2. *ambiguous* (or *reversible*) *figures*
3. *paradoxical figures* (or *impossible objects*)
4. *fictions*.

Distortions

Figure 15.7 shows several examples of distortions. The Poggendorf illusion (Figure 15.7b) is accentuated when the diagonal line is more steeply slanted and when the parallel bars are more separated. As the line is brought closer to the horizontal, the illusion disappears (MacKay & Newbigging, 1977). The horizontal–vertical illusion (Figure 15.7d) illustrates our tendency to overestimate the size of vertical objects. This helps to explain why a small tree we've chopped down looks shorter than it did when it was standing (Coren & Girgus, 1978).

Ambiguous figures

In addition to Rubin's vase (see page 244), three other well-known reversible figures are shown in Figure 15.8 (a–c). In the Necker cube (Figure 15.8a), the figure undergoes a *depth reversal*. The cube can be perceived with the crosses being drawn either on the back side of the cube or on the top side looking down. Although our perceptual system interprets this 2-D line drawing as a 3-D object, it seems unsure as to which of the two orientations should be perceived. Hence, the cube spontaneously reverses in depth orientation if looked at for about 30 seconds.

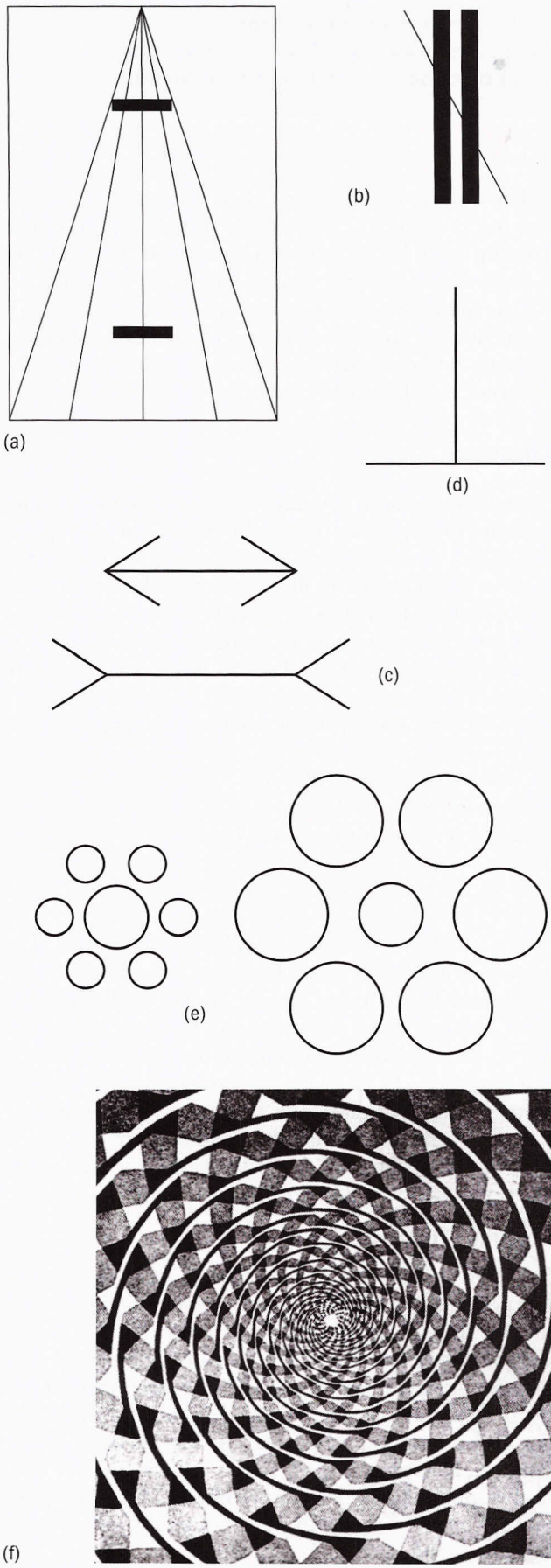


Figure 15.8b shows Boring's 'Old/Young Woman'. These two are examples of reversible figures in which the change in perception illustrates object reversal. The figure can be perceived as the profile of a young woman's face with the tip of her nose just visible, or the young woman's chin can be perceived as the (very large) nose of a much older woman (who also has a very long chin).

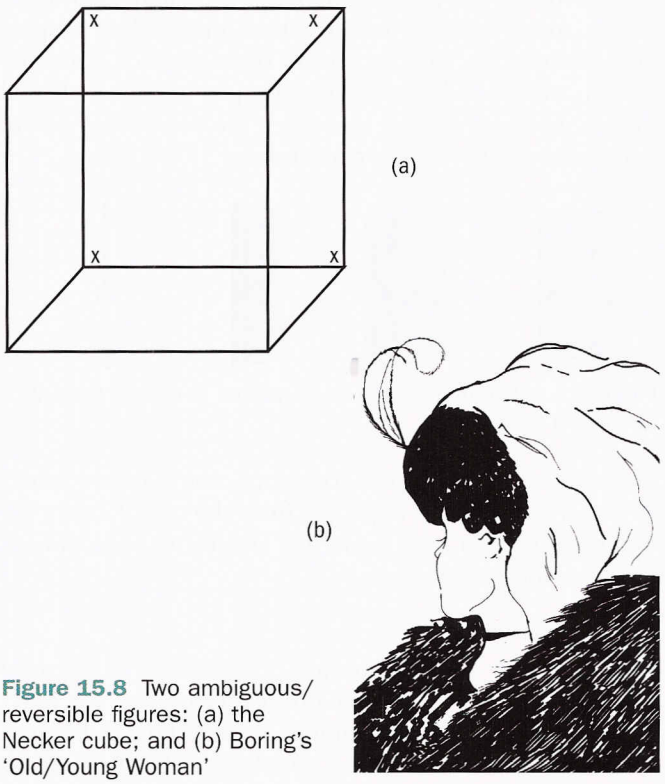


Figure 15.8 Two ambiguous/reversible figures: (a) the Necker cube; and (b) Boring's 'Old/Young Woman'

Paradoxical figures

While paradoxical figures look ordinary enough at first, on closer inspection we realise they cannot exist in reality (hence 'paradoxical'). Figure 15.9 (a–d) illustrates four such paradoxical figures.

According to Hochberg (1970), it takes us a few seconds to realise that a figure is impossible. This is because we need time to examine it fully or scan it and

Figure 15.7 Distortions (or geometric illusions). In the Ponzo illusion (a), the horizontal bar at the top is seen as being longer than the horizontal line at the bottom, even though they're both the same length. The Poggendorf illusion (b) suggests that the segments of the diagonal line are offset, even though they're not. The line with the outgoing fins in the Müller–Lyer illusion (c) appears to be longer than the line with the ingoing fins, but in fact they're the same length. In the horizontal–vertical illusion (d), the vertical line is seen as being longer, although it is the same as the horizontal line. In Titchener's circles (e), the central circle in the left-hand group is seen as being larger than the central circle of the right-hand group, but they're both the same size. Finally, in the twisted card illusion (f), the twisted cards appear to be a spiral pattern, but the circles are, in fact, concentric

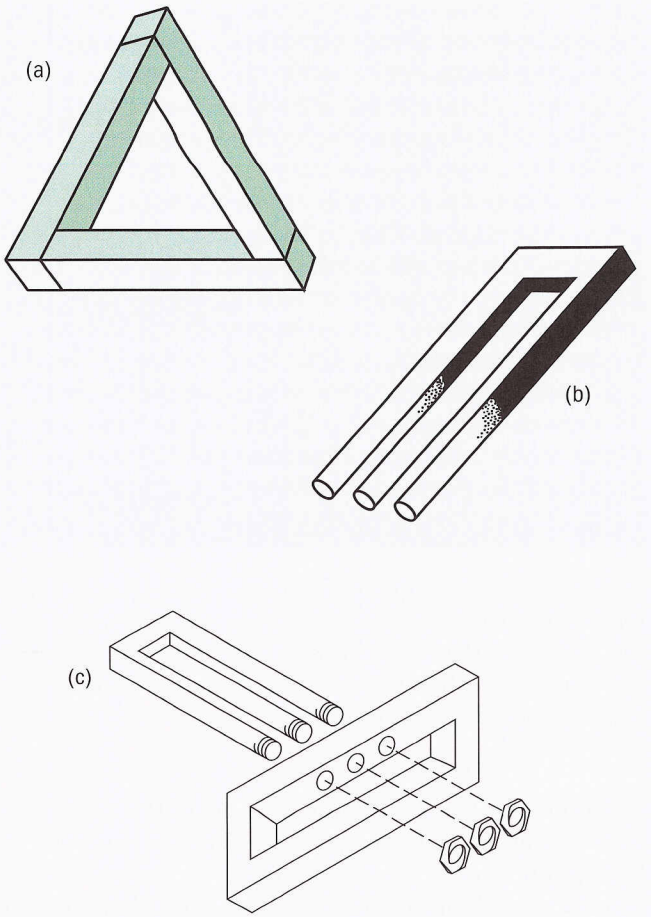


Figure 15.9 Four paradoxical objects. (a) is the Penrose impossible triangle and (b) is variously known as 'Trident' and 'The Devil's Pitchfork'. In (c), Trident has been combined with another impossible object. (d) is M.C. Escher's *Relativity*. Although working in two dimensions, Escher has used perceptual cues in such a way as to encourage the viewer to perceive a three-dimensional figure

organise its parts into a meaningful whole. When we look at a figure, our eyes move from place to place at the rate of about three changes per second (Yarbus, 1967: see Key Study 14.2, page 234). So, when we look at an impossible figure, it takes time for us to scan it and perceive its form, and only after this scanning can we appreciate its impossible nature.

Fictions

Fictions help explain how we perceive that objects possess specific shapes. The idea that shape is determined by the physical contours of an object (which cause edge-detector cells in the visual system to fire: see Chapter 5) has been challenged by the existence of *subjective contours*. These are the boundaries of a shape perceived in the absence of physical contours (Kanizsa, 1976).

In Figure 15.10a, there's no white triangular contour physically present. But we perceive the shape of a white triangle, which appears to be opaque and lighter than the background. There are some contours that are physically present (the overlap of the triangle and the disc), which might cause enough edge-detector cells to fire. However, this explanation cannot account for the fact that in Figure 15.10b, the partial and straight physical contours give rise to a curved triangle. Nor can it explain the subjective contour in Figure 15.10c, which is marked by lines in a totally different orientation (Krebs & Blackman, 1988).

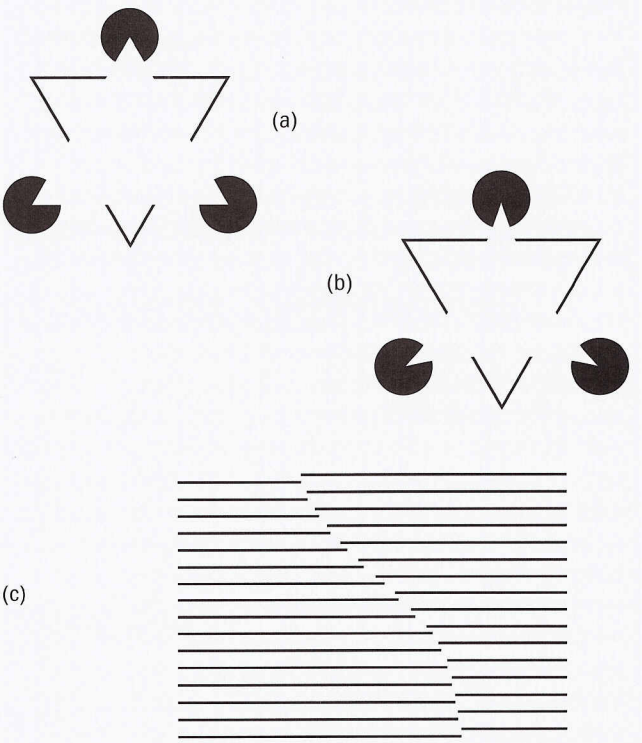


Figure 15.10 Three fictions. In (a), the 'white triangle' is banded by a subjective contour, rather than a continuous physical one. In (b), the subjective contours are curved. In (c), lines of different orientation produce a subjective contour

It's the *relationship between its parts* that defines a shape, rather than its physical contours (Rock, 1984). Physical contours are, of course, usually indicative of the location of an object's parts. But the location of the parts can also be determined by subjective contours. As a result, the perception of shape must involve more than simply detecting the elements of a pattern (Krebs & Blackman, 1988).

ASK YOURSELF...

- Can you think of any 'real-life' illusions – that is, illusions that haven't been deliberately created by psychologists (or artists) to study perception?

Illusions of movement

We're surrounded by illusions in our everyday life. The use of perspective cues by artists leads us to infer depth and distance, that is, we add something to a picture which isn't physically present, just as we do to the images projected on our television screens. Television pictures also use the illusion of movement. Just as it's possible for changes in patterns of retinal stimulation not to be accompanied by the perception of movement, so it's possible to perceive movement without a successive pattern of retinal stimulation (Ramachandran & Anstis, 1986). This is called *apparent movement*.

Box 15.2 Some examples of apparent movement

The autokinetic effect: If you look at a stationary spot of light in an otherwise completely dark room, the light will appear to move. According to Gregory (1973), this illusion is produced by small and uncontrollable eye movements. Another explanation suggests that it's caused by the absence of a stimulating background to provide a frame of reference for measuring movement. This is supported by the fact that the autokinetic effect disappears if other lights are introduced (see also Key Study 26.1, pages 442–443).

Stroboscopic motion: The illusion of movement is created by the rapid succession of slightly different stationary images. If these are presented sufficiently quickly (around 16 to 22 frames per second), an illusory impression of continuous movement is produced. This is the mechanism by which moving pictures operate. With fewer than 16 frames per second, the moving picture looks jumpy and unnatural. Smooth slow motion is achieved by filming at a rate of 100 or more frames per second, and then playing back at about 20 frames per second.

The phi phenomenon: This is a simpler form of stroboscopic motion, in which a number of separate lights are turned on and off in quick succession. This gives the impression of a single light moving from one position to another. Both stroboscopic motion and the phi phenomenon can be explained by the law of continuity (see Box 15.1, page 245).

Induced movement: This occurs when we perceive an object to be moving, although in reality it's stationary and the surroundings are moving. Movie stars, for example, are often filmed in a stationary car with a projection of a moving background behind them. Similarly, when the moon is seen through a thin cover of moving clouds, we sometimes perceive it to be moving very quickly. Another example is the experience of sitting in a car at traffic lights and noticing that we are 'moving backwards', when in fact the car at our side is moving forwards.

Motion after-effects: People who work on inspection belts in factories experience movement after-effects when the belt suddenly stops but is then perceived as moving backwards. Similarly, if you stare at a waterfall and then switch your gaze to the ground surrounding it, the ground appears to be moving in the opposite direction.

At least some examples of apparent movement can be termed *intelligent errors*, because they result from perceptual strategies that work most of the time (Rock, 1983). Motion after-effects, however, can be more easily explained in physiological terms.

Illusions of shading

According to Ramachandran & Rogers-Rachamandran (2004), the visual image is inherently ambiguous. Perception is partly a matter of using certain assumptions about the world in order to resolve such ambiguities, and illusions can help uncover the brain's hidden rules and assumptions.

ASK YOURSELF...

- How would you describe the group of disks on the left in Figure 15.11?
- How would you describe those on the right?
- Can you try to explain the different perceptions?

In Figure 15.11, the disks on the left are usually seen as eggs, while those on the right are seen as cavities. The eggs are light on the top, and the cavities are light on the bottom. According to Ramachandran and Rogers-Ramachandran, this reveals an assumption made by the visual system, namely that it expects light to shine from *above*.

ASK YOURSELF...

- Turn the page upside down.
- All the eggs and cavities instantly switch places.
- Ask a friend to hold the page right side up for you. Then bend down and look between your legs at the page (which is now behind you).
- Again, the switch occurs, 'as if the sun is stuck to your head and shining upward from the floor' (Ramachandran & Rogers-Ramachandran, 2004).

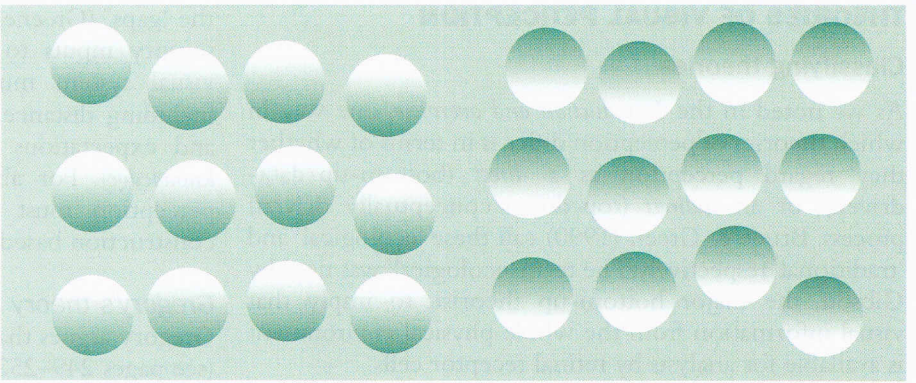


Figure 15.11 From Ramachandran & Rogers-Ramachandran (2004)

PERCEPTION OF REAL MOVEMENT

The importance of eye movements

To perceive real (actual) movement, there must be changes in the retinal image. Indeed, it seems that the receptors respond only to changes in the environment. As we saw in Chapter 5, the eyes are constantly making minute, oscillatory movements which keep the receptors stimulated. A device for stabilising the retinal image (Cornsweet, 1970) shows that these movements are necessary for seeing things at all. A tiny slide projector, mounted on a contact lens, is attached to the cornea and a slide projected on to a screen. Since the lens and the projector move with the eye, the retinal image is stabilised. In other words, eye movements and the movement of the image on the screen 'cancel each other out', so the retinal image stays in the same place. After initially seeing the picture with normal acuity, it begins to fade within a few seconds, and after a minute disappears altogether.

If you turn your head slowly around with your eyes open, or you scan a stationary scene, you'll create a succession of different retinal images. But you won't perceive movement (location constancy 'kicks in'). So, changes in the retinal image cannot be a sufficient basis for the perception of movement. Conversely, when an object moves across your visual field and you follow it with your eyes, the retinal image remains the same, but you do perceive movement.

Configurational change

Objects moving in the environment usually do so against a background of stationary (or differently moving) objects. Also, the nose and other anatomical borders to the visual field provide stationary reference points against which to judge movement. This causes a *configuration change*, or change in the overall pattern and interrelationship between objects. However, although in practice this is often an important source of information, it may not be a necessary one. If a lighted cigarette is moved about in a dark room it will be perceived as moving, even though there are no background cues or frames of reference (Gregory, 1973). (This shouldn't be confused with the autokinetic effect: see Box 15.2.)

So how does the brain do it?

It seems that the brain is capable of distinguishing between eye movements which do signal movement of objects (real movement), and those (and head movements) which don't. Probably the *superior colliculus* plays an important role in making this distinction (see Chapter 5). Gregory (1973) describes two systems:

1. the *image–retina system*, which responds to changes in the visual field that produce changes in the retinal image
2. the *eye–head system*, which responds to movements of the head and eyes.

The perception of movement is the product of an interplay between the two systems.

According to Braddick (1974), the human visual system seems to have two separate systems for measuring the speed and direction of individual features moving in the retinal image:

1. a long-range, *feature-tracking* system seems to infer motion from one instant to the next, which underpins our conscious impression of motion in films and television
2. a short-range, *motion-sensing* system seems to measure motion more directly by signalling changes in the image content over time.

Although neither system is fully understood, the basic requirements are in place even at the retina. P-type ganglion cells respond to abrupt *spatial* changes in the image, while *M-type* ganglion cells may respond to abrupt *temporal* (time-related) changes (see Chapter 5, page 84). Additionally, the temporal cortex contains many cells selective for different types of motion, and most visual cortical cells prefer moving to stationary stimuli (Harris, 1998).

Classifying theories

As we noted in the *Introduction and overview*, one way in which theories of perception differ is in terms of whether they regard perception as a *direct* (bottom-up/data-driven), or an *indirect* (top-down/conceptually driven) process. Bruce & Green (1990) call these 'ecological' and 'traditional' respectively. The term 'ecological' was used by Gibson, the major bottom-up theorist, to imply that visual information from the whole physical environment is available for analysis by retinal receptor cells.

Another issue which divides theories relates to the *nature–nurture debate* (see Chapter 50). *Empiricists* regard perception as primarily the result of learning and experience, while *nativists* believe it's essentially an innate ability, requiring little, if any, learning. All the top-down theorists are also empiricists, and the major nativists are the Gestalt psychologists (see pages 244–247). Gibson was influenced by the Gestalt school, but he's generally regarded as an empiricist. Finally, Marr's theory has both top-down and bottom-up components, and he too was influenced by some of the Gestalt laws.

Table 15.3 A classification of theories of perception

	Direct (bottom-up/ecological)	Indirect (top-down/traditional)
Empiricist	Gibson (1966, 1979)	Gregory (1972, 1980)
		Bruner (1957)
	Neisser (1967)	
	Marr (1982)	
Nativist	Gestalt	

Gregory's constructivist theory

According to Gregory (1966):

> Perception is not determined simply by stimulus patterns. Rather, it is a dynamic searching for the best interpretation of the available data ... [which] involves going beyond the immediately given evidence of the senses.

To avoid sensory overload, we need to *select* from all the sensory stimulation which surrounds us. Also, we often need to *supplement* sensory information, because the total information we need might not be directly available to the senses. This is what Gregory means by 'going beyond the immediately given evidence of the senses', and it's why his theory is known as *constructivist*. For Gregory, we make inferences about the information the senses receive (based on Helmholtz's nineteenth-century view of perception as consisting of *unconscious inferences*).

Gregory's theory and perceptual constancies

Perceptual constancies (see pages 248–249) tell us that visual information from the retinal image is sketchy and incomplete, and that the visual system has to 'go beyond' the retinal image in order to test hypotheses which fill in the 'gaps' (Greene, 1990). To make sense of the various sensory inputs to the retina (*low-level information*), the visual system must draw on all kinds of evidence, including distance cues, information from other senses, and expectations based on past experience (*high-level knowledge*). For all these reasons, Gregory argues that perception must be an indirect process involving a construction based on physical sources of energy.

Gregory's theory and illusions

Gregory argues that when we experience a visual illusion (see pages 249–252), what we perceive may not be physically present in the stimulus (and hence not present in the retinal image). Essentially, an illusion can be explained in terms of a perceptual hypothesis which isn't confirmed by the data: our attempt to interpret the stimulus figure turns out to be inappropriate. In other words, an illusion occurs when we attempt unsuccessfully to construe the stimulus in keeping with how we normally construe the world.

Box 15.3 Explaining the Ponzo illusion

In the Ponzo illusion (see Figure 15.7a, page 250), our system can *either*:

- accept the equal lengths of the two central bars as drawn on a flat 2-D surface (which would involve assuming that the bars are equidistant from us), or
- 'read' the whole figure as a railway track converging into the distance (so that the two horizontal bars represent sleepers, the top one of which would be further away from us but appears longer, since it 'must' be longer in order to produce the same length image on the retina).

The second interpretation is clearly inappropriate, since the figure is drawn on a flat piece of paper with no actual distance differences. As a result, we experience an illusion.

All illusions illustrate how the perceptual system normally operates by forming a 'best guess', which is then tested against sensory inputs. For Gregory (1966), illusions show that perception is an active process of using information to suggest and test hypotheses. What we perceive aren't the data, but an interpretation of them, so that:

> A perceived object is a hypothesis, suggested and tested by sensory data.

As Gregory (1996) has noted, 'this makes the basis of knowledge indirect and inherently doubtful'.

Gregory argues that when we view a 3-D scene with many distance cues, the perceptual system can quickly select the hypothesis that best interprets the sensory data. However, reversible figures supply few distance cues to guide the system. For example, the spontaneous reversal of the Necker cube (see page 250) occurs because the perceptual system continually tests two equally plausible hypotheses about the nature of the object represented.

One striking illusion is the *rotating hollow mask* (Gregory, 1970). There's sufficient information for us to see the mask as hollow, but it's impossible not to see it as a normal face. The perceptual system dismisses the hypothesis that the mask is an inside-out face, because it's so improbable. The hypothesis we select is strongly influenced by our past experiences of faces (Gregory, 1970).

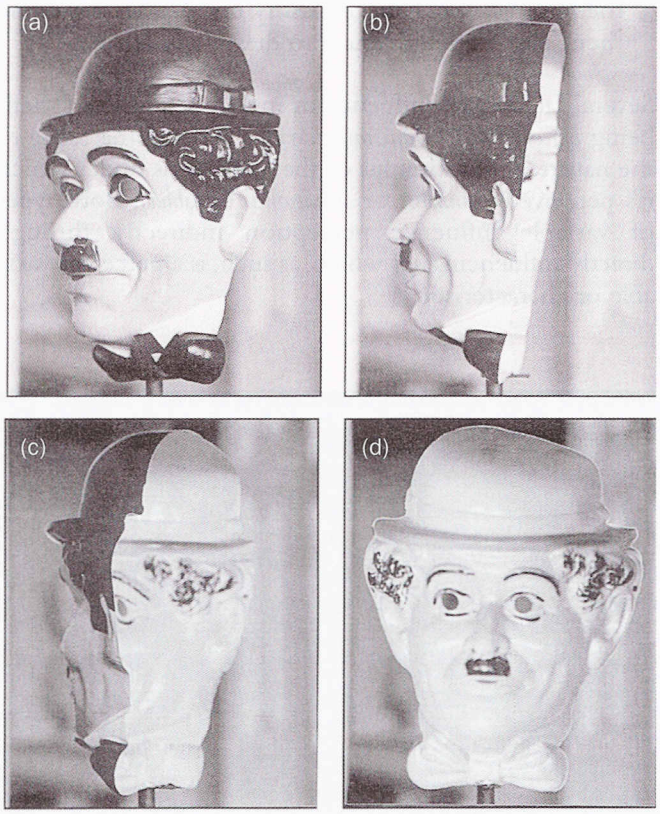


Figure 15.12 The rotating hollow mask. (a) shows the normal face which is rotated to (d), which is a hollow face. However, (d) appears like a normal face rotating in the opposite direction

With the impossible triangle (see Figure 15.9a), our perceptual system makes reasonable, but actually incorrect, judgements about the distance of different parts of the triangle.

ASK YOURSELF...

- Knowing what you do about Gregory's theory, how do you think he might try to explain the Müller–Lyer illusion (see Figure 15.7c)? You may find Box 15.3 (page 254) helpful.

Misapplied size constancy theory

According to Gregory, the Müller–Lyer illusion can be explained as follows.

- The arrow with the ingoing fins provides linear perspective cues, suggesting that it could be the outside corner of a building. Hence, the fins are seen as walls receding away from us, making the shaft look closer to us.
- In the arrow with the outgoing fins, the cues suggest that it could be the inside corner of a room, and the outgoing fins as walls coming towards us. This would make the shaft appear 'distant'.

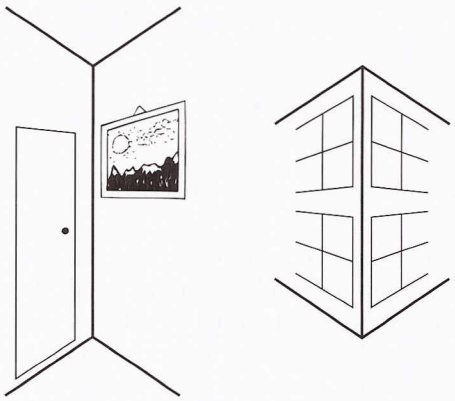


Figure 15.13 A representation of the Müller–Lyer illusion as suggested by Gregory's misapplied size constancy theory

- The retinal images produced by the arrows are actually equal and, according to size constancy, if equally sized images are produced by two lines, one of which is further away from us than the other, then the line which is furthest from us must be longer! Because this interpretation is taking place unconsciously and quickly, we immediately perceive the illusion.

However, if the perspective cues are removed, the illusion remains, suggesting that the misapplied size constancy theory is itself misapplied (see Figure 15.14). Alternatively, the apparent distance of the arrow could be caused by the apparent size of the arrows rather than, as Gregory claims, the other way around (Robinson, 1972).

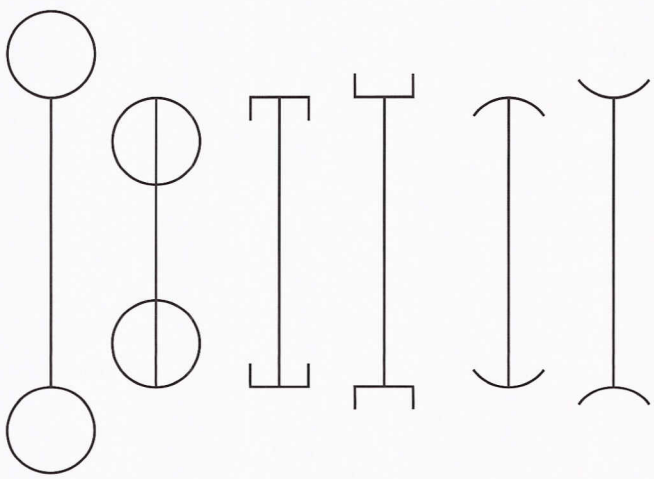


Figure 15.14 The Müller–Lyer illusion with the depth cues removed (after Delboeuf, 1892)

In a variation of the original Müller–Lyer illusion, Morgan (1969) placed a dot mid-way along the arrow (see Figure 15.15). The dot appears to be nearer the left-hand end, and the only way this can be explained by Gregory is to claim that the fins make the arrow appear to slope away from us, providing a rather odd perspective interpretation of the figure. According to Gregory (1972), such a slope can be demonstrated, although this claim has been disputed (Eysenck & Keane, 1995).



Figure 15.15 Morgan's (1969) modified Müller–Lyer illusion

In the Müller–Lyer illusion, we know the arrows are the same length, yet we still experience the illusion. Our knowledge should enable us to modify our hypotheses in an adaptive way. While some illusions can be explained in terms of the same unconscious processes occurring (an example being size constancy), not all illusions are amenable to explanation in the way Gregory proposes (Robinson, 1972).

Gregory's theory and perceptual set

Perceptual set is directly relevant to Gregory's view that perception is an active process involving selection, inference and interpretation. Allport (1955) describes perceptual set as:

> ... a perceptual bias or predisposition or readiness to perceive particular features of a stimulus.

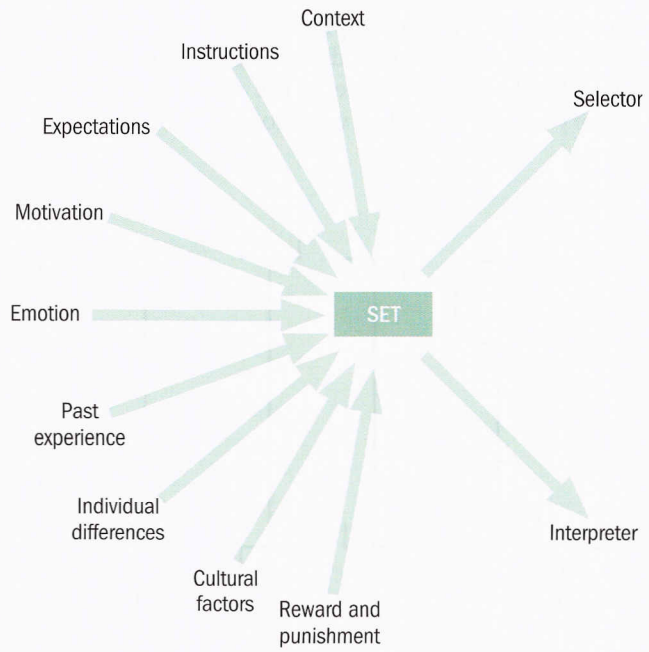


Figure 15.16 The indirect influence of perceiver and stimulus variables on perception through their direct influence on set

It refers to the tendency to perceive or notice some aspects of available sense data and ignore others. According to Vernon (1955), set acts as:

- a *selector* – the perceiver has certain expectations which help focus attention on particular aspects of the incoming sensory information, and
- an *interpreter* – the perceiver knows how to deal with the selected data, how to classify, understand and name them, and what inferences to draw from them.

Several factors can influence or induce set, most of them being *perceiver* (or *organismic*) variables. But some relate to the nature of the stimulus or the conditions under which it's perceived (*stimulus* or *situational variables*). Both types of variable influence perception indirectly, through directly influencing set which, as such, is a perceiver variable or characteristic.

Box 15.4 Some findings relating to perceptual set

Motivation: People with some particular need (such as hunger) are more likely to perceive vague or ambiguous pictures as relating to that need (Sanford, 1937; McClelland & Atkinson, 1948).

Emotion: '*Perceptual defence*' refers to the findings from laboratory experiments that *subliminally perceived* words (below the threshold of conscious awareness) which evoke unpleasant emotions take longer to perceive at a conscious level than neutral words (McGinnies, 1949).

Values: Lambert *et al.* (1949) found that when children were taught to value something more highly than they'd previously done, they perceived the valued thing as being larger (*perceptual accentuation*).

Beliefs: The beliefs we hold about the world can affect our interpretation of ambiguous sensory signals. A person who believes in UFOs is likely to perceive an ambiguous object in the sky differently from a person who doesn't share that belief (Wade & Tavris, 1993).

Cognitive style: The way we deal with our environment appears to affect our perception of it. Some people perceive the environment as a whole and don't clearly differentiate the shape, colour and so on of individual items. Others perceive the elements of the environment as separate and distinct (Witkin *et al.*, 1962).

Context and expectations: The interaction between context and expectations was demonstrated by Bruner & Postman (1949) and Bruner *et al.* (1952). When participants are asked to copy a briefly presented stimulus such as:

PARIS IN THE THE SPRING | ONCE IN A A LIFETIME | A BIRD IN THE THE HAND

it's typically copied as PARIS IN THE SPRING/ONCE IN A LIFETIME/A BIRD IN THE HAND. One reason eyewitness testimony is so unreliable is that our general expectation of people is that they'll be of 'average height and weight', and this is what almost all eyewitness accounts describe people as being (Loftus, 1980: see Chapter 21).

An evaluation of Gregory's theory of perception

- Gregory's theory raises many important questions which have yet to be answered satisfactorily (Gordon, 1989). For example, if perception is essentially constructive, then we need to know how it gets started and why there's such common experience among different people, all of whom have had to construct their own idiosyncratic perceptual worlds. Also, given that perception is typically accurate (and our hypotheses are usually correct), it seems unlikely that our retinal images are really as ambiguous and lacking in detail as Gregory suggests.
- Gregory has been much more successful in explaining at least some types of illusion than in explaining perception as a whole (Eysenck & Keane, 1995). His theory may be most relevant when stimuli are ambiguous or incomplete, presented very briefly, or their processing interrupted (Groome *et al.*, 1999). In Gordon's (1989) view, constructivist theories have underestimated the richness of sensory evidence in the real world. For Gordon:

> It is possible that we perceive constructively only at certain times and in certain situations. Whenever we move under our own power on the surface of the natural world and in good light, the necessary perceptions of size, texture, distance, continuity, motion and so on, may all occur directly and reflexively.

Gibson's theory of direct perception

Constructivists use the retinal image as their starting point for explaining perception. According to Gibson (1966), this approach mistakenly describes the input for a perceiver in the same terms as that for a single photoreceptor, namely a stream of photons. For Gibson, it's better to begin by considering the input as a pattern of light extended over time and space (an *optic array* containing all the visual information from the environment striking the eye of a stationary perceiver).

The optic array provides unambiguous, invariant information about the layout and relevant properties of objects in space. This information takes three main forms: *optic flow patterns*, *texture gradient*, and *affordances*. Perception essentially involves 'picking up' the rich information provided by the optic array in a direct way, which involves little or no (unconscious) information processing, computations, or internal representations (Harris, 1998).

Optic flow patterns

During the Second World War, Gibson prepared training films describing the problems pilots experience when taking off and landing. He called the information available to pilots *optic flow patterns* (OFPs). As shown in Figure 15.17, the point to which a pilot moves appears motionless, with the rest of the visual environment apparently moving away from that point. Thus, all around the point there's an apparent radial expansion of textures flowing around the pilot's head.

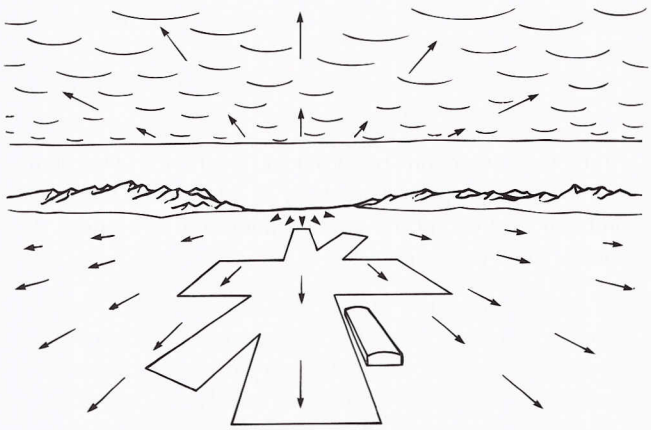


Figure 15.17 The optic flow patterns as a pilot approaches the landing strip (from Gibson, 1950)

The lack of apparent movement of the point towards which the pilot moves is an invariant, unchanging feature of the optic array. Such OFPs provide unambiguous information about direction, speed and altitude. OFPs in general refer to changes in the optic array as the perceiver moves about.

Texture gradients

Textures expand as we approach them and contract as they pass beyond our heads. This happens whenever we move toward something, so that over and above the behaviour of each texture element, there's a 'higher-order' pattern or structure available as a source of information about the environment (and so the flow of the texture is invariant). Texture gradients (or *gradients of texture density*) are important depth cues perceived directly without the need for any inferences. The depth cues described in Table 15.2 are all examples of directly perceived, invariant, higher-order features of the optic array. For Gibson, then, the third dimension (depth) is available to the senses as directly as the other two dimensions, automatically processed by the sense receptors, and automatically producing the perceptual experience of depth.

Affordances

The environment contains invariant information, the detection of which has survival value for the perceiver. *Affordances* are directly perceivable, potential uses of objects, such as surfaces that are stand-on-able or sit-on-able,

objects that are graspable or throwable, or that afford eating (are 'edible'). In other words, affordances are the *meanings* that an environment has for an animal, and the relationship between perceiver and environment is vitally important.

An evaluation of Gibson's theory

- Gibson was concerned with the problem of how we obtain constant perception in everyday life, based on continually changing sensations. According to Marr (1982), this indicated that he correctly regarded the problem of perception as that of recovering from sensory information 'valid properties of the external world'.
- However, as Marr points out, Gibson failed to recognise two equally critical things:

  First, the detection of physical invariants, like image surfaces, is exactly and precisely an information-processing problem ... Second, he vastly underrated the sheer difficulty of such detection.

- An interesting study by Lee & Lishman (1975) tends to support Gibson's belief in the importance of movement in perception, and the artificiality of separating sensory and motor aspects of behaviour (see Key Study 15.2).
- Gibson's concept of affordances is part of his attempt to show that all the information needed to make sense of the visual environment is directly available in the visual input (a purely 'bottom-up' approach to perception). Bruce & Green (1990) argue that this concept is most powerful and useful in the context of *visually guided* behaviour, as in insects. Here, it makes sense to speak of an organism detecting information available in the light needed to organise its activities, and the idea of it needing a conceptual representation of its environment seems redundant.

KEY STUDY 15.2 If the room sways, there may be an experiment going on (Lee & Lishman, 1975)

- Lee and Lishman used a specially built swaying room (suspended above the floor), designed to bring texture flow under experimental control.
- As the room sways (so changing the texture flow), adults typically make slight unconscious adjustments, and children tend to fall over. Normally, the brain is very skilled at establishing correlations between changes in the optic flow, signals to the muscles, and staying upright.
- Arguably, the most important reason for having a visual system is to be able to anticipate when contact with an approaching object is going to be made. Lee and Lishman believe that estimating 'time to contact' is crucial for actions such as avoidance of objects and grasping them, and thus represents extremely important ecological information. This can be expressed as a formula:

$$\text{Time to contact} = \frac{\text{Size of retinal image}}{\text{Rate of expansion of retinal image}}$$

- This is a property shared by all objects, and so is another invariant, demonstrating the unambiguous nature of the retinal image.
- Measures of optic flow have also provided some understanding of how skilled long-jumpers control their approaches to the take-off position (Gordon, 1989).

- However, humans act in a *cultural* as well as physical environment. It's inconceivable that we don't need any knowledge of writing or the postal system in order to detect that a pen affords writing or a postbox affords posting a letter, and that these are directly perceived invariants. People see objects and events as what they are in terms of a culturally given conceptual representation of the world, and Gibson's theory says much more about '*seeing*' than about '*seeing as*'.

'Seeing' and 'seeing as'

According to Fodor & Pylyshyn (1981):

What you see when you see a thing depends upon what the thing you see is. But what you see the thing as depends upon what you know about what you are seeing.

This view of perception as 'seeing as' is the fundamental principle of *transactionalism*. Transactionalists (such as Ames, cited in Ittelson, 1952) argue that because sensory input is always ambiguous, the interpretation selected is the one most likely to be true given what's been perceived in the past.

In the Ames distorted room (see Figure 15.18), the perceiver has to choose between two different beliefs about the world built up through past experience. The first is that rooms are rectangular, consist of right angles, and so on. The second is that people are usually of 'average' height. Most observers choose the first, and so judge the people to be an odd size. However, a woman who saw her husband in the room and judged the room to be odd, shows that particularly salient past experiences can override more generalised beliefs about the world.

The Ames room is another example of a visual illusion, and the inability of Gibson's theory to explain mistaken perception is perhaps its greatest single weakness. Gibson argues that most 'mistaken perceptions' occur in situations very different from those which prevail in the natural environment. However, to suggest that illusions are nothing but laboratory tricks designed to baffle ordinary people isn't true, since at least some produce effects similar to those found in normal perception. A striking example is the 'hollow mask' illusion (Bruce & Green, 1990: see Figure 15.12).



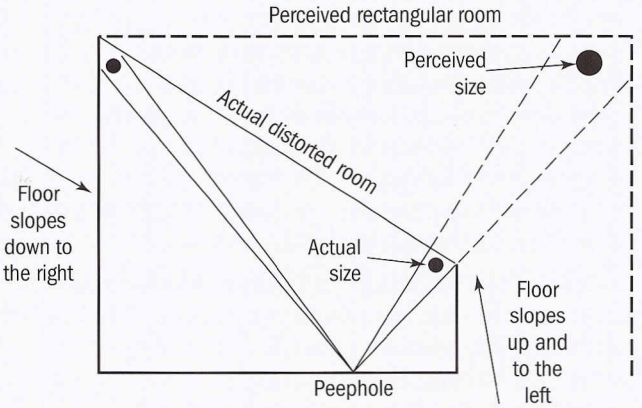


Figure 15.18 The Ames room and a schematic representation of its 'secret'. The room is constructed in such a way that, when viewed with one eye through a peephole, a person at one end may appear very small and the person at the other end very tall. When they cross the room, they appear to change size. The room itself appears perfectly normal and regular to an observer

A possible synthesis of Gregory's and Gibson's theories

Despite the important differences between Gibson's and Gregory's theories, they also agree on certain points.

Similarities

- Visual perception is mediated by light reflected from surfaces and objects.
- Some kind of physiological system is needed to perceive.
- Perception is an active process. (In Gibson's, 1966, view, 'a perceiving organism is more like a map-reader than a camera').
- Perceptual experience can be influenced by learning.

Differences

- Gregory believes that meaningless sensory cues must be supplemented by memory, habit, experience and so on, in order to construct a meaningful world. Gibson argues that the environment (initially the optic array) provides us with all the information we need for living in the world. Perceptual learning consists not in 'gluing' together sensory 'atoms', but in coming to differentiate and discriminate between the features of the environment as presented in the optic array.
- To the extent that Gibson acknowledges the role of learning (albeit a different kind of learning from Gregory), he may be considered an *empiricist* (see above), together with his emphasis on what's provided by the physical world. In other respects, though, Gibson can be considered a *nativist*. As we noted earlier, he was very much influenced by the Gestalt psychologists, stressing the organised quality of perception. However, while for Gibson this organised quality is part of the physical structure of the light impinging on the observer's eye, for Gestaltists it's a function of how the brain is organised.

Eysenck & Keane (1995) argue that the relative importance of bottom-up and top-down processes is affected by several factors. When viewing conditions are good, bottom-up processing may be crucial. However, with brief and/or ambiguous stimuli, top-down processing becomes increasingly important. Gibson seems to have been more concerned with optimal viewing conditions, while Gregory and other constructivists have tended to concentrate on sub-optimal conditions (Eysenck, 1993). In most circumstances, both bottom-up and top-down processes are probably needed, as claimed by Neisser (1976).

Box 15.5 Neisser's (1976) analysis-by-synthesis model

- Neisser assumes the existence of a *perceptual cycle* involving *schemata*, *perceptual exploration*, and *stimulus environment*.
- Schemata contain collections of knowledge based on past experience (see Chapter 21), and these direct perceptual exploration towards relevant environmental stimulation. Such exploration often involves moving around the environment, leading the perceiver actively to sample the available stimulus information. If this fails to match the information in the relevant schema, then the hypothesis is modified accordingly.
- An initial *analysis* of the sensory cues/features (a *bottom-up* process) might suggest the hypothesis that the object being viewed is, say, a chair.
- This initiates a search for the expected features (such as four legs and a back), which is based on our schema of a chair (and this *synthesis* is a *top-down* process).
- But if the environmental features disconfirm the original hypothesis (the 'chair' has only three legs and no back), then a new hypothesis must be generated and tested (it might be a stool), and the appropriate schema activated.
- Neisser argues that perception never occurs in a vacuum: our sampling of sensory features of the environment is

always guided by our knowledge and past experience. Perception is an interactive process, involving both bottom-up feature analysis and top-down expectations.

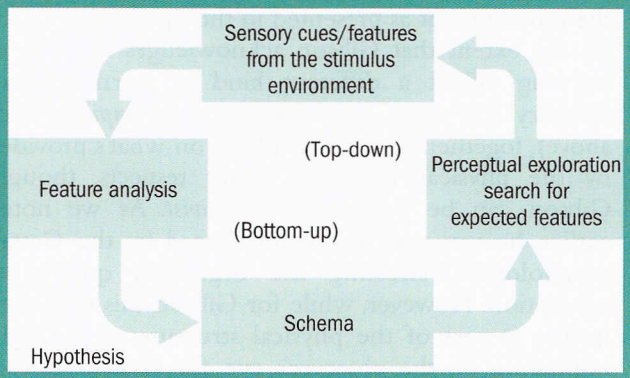


Figure 15.19 Neisser's analysis-by-synthesis model of perception

Marr's computational theory of vision

According to Marr (1982), the central 'problem' of perception is identifying the precise mechanisms and computations by which useful information about a scene is extracted from that scene ('useful information' being what will guide the thoughts or actions of the total system of which the visual system is part). Marr's theory begins by asking 'What is the visual system for?', because only by answering this can we understand how it works.

For Marr, there are three levels at which any process must be understood:

- The *computational theory level* is a theoretical analysis of the tasks performed by a system (in this case, the visual system), and the methods needed to perform them.
- The *algorithmic level* is concerned with identifying the actual operations by which perceptual tasks (processes and representations) are achieved.
- The *hardware or implementation level* is concerned with the mechanisms underlying the system's operation. In the case of a biological visual system, these are neuronal or nervous system structures.

Marr argues that vision's main 'job' is to derive a representation of the shape of objects from information contained in the retinal image. This happens via four successive stages, which constitute individual *modules*. Each stage or module takes as its input the information it receives from the previous stage/module, converting it into a more complex description/representation. By taking the image as the starting point, Marr's approach is strictly bottom-up (Roth, 1995). But as we'll see later, there are also top-down aspects.

Box 15.6 The four stages, or modules, of Marr's computational theory of vision

The image (or grey-level description): This represents the intensity of light at each point in the retinal image, so as to discover regions in the image and their boundaries. Regions and boundaries are parts of images, not parts of things in the world, so this represents the starting point of seeing.

The primal sketch: Useful attributes of a 3-D scene (such as object boundaries and shadows) can be recovered from the image by locating and describing the places where the image intensity changes relatively abruptly from place to place.

- The function of the *raw primal sketch* is to describe potentially significant regions, which may correspond in the real world to the boundaries between overlapping objects, their edges, and texture.
- The *full primal sketch* provides information about how these regions 'go together' to form structures (it provides a functional explanation of the Gestalt grouping principles: see Box 15.1). Grouping is necessary, since in complex scenes the images of different objects may *occlude* (overlap) each other. Overall, it provides a more useful and less cluttered description of the image (hence 'sketch').

2½-D sketch: Its function is to make explicit the orientation and depth of visible surfaces, as if a 'picture' of the world is beginning to emerge. It's no longer an image, because it contains information about things in the world which provide the image. But it describes only the visible parts of the scene, and so isn't fully three-dimensional.

- Object recognition requires that the input representation of the object is mapped against a representation stored in memory, so that non-visible parts are taken into account (which is essentially what perceptual constancy involves: see pages 248–249).
- The sketch changes relative to the observer's perspective (it's viewpoint-dependent).

3-D model representation: Its function is to make shapes and their spatial organisation explicit as belonging to particular 3-D objects, independently of any particular position or orientation. The observer now has a model of the external world. Knowledge of the nature and construction of the object is now used (*top-down processing*). It can be thought of as *object recognition*.

These four stages are summarised in Figure 15.20.

3-D model representation and object recognition

Since the 3-D model representation involves top-down processes, Marr claimed that in many cases 3-D structures can be derived from the 2½-D sketch using only general principles of the kind used in the earlier stages. This view is based on the observation that stick-figure representations (especially of animals and plants) are easy to recognise (Garnham, 1991). The brain automatically transposes the contours derived from the 2½-D sketch on

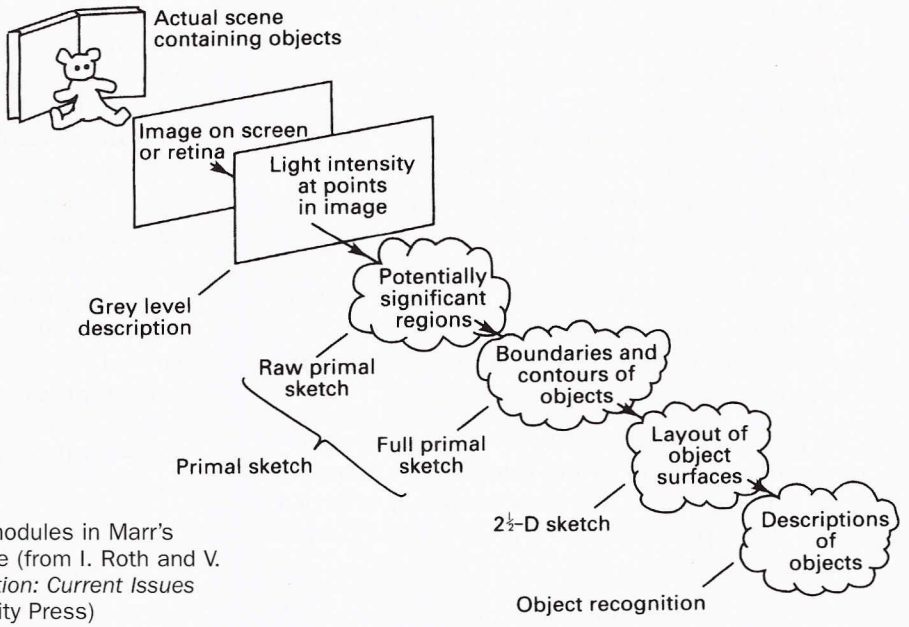


Figure 15.20 The four basic stages or modules in Marr's model of the processing of a visual image (from I. Roth and V. Bruce (1995) *Perception and Representation: Current Issues* (2nd edition). Buckingham: Open University Press)

to axes of symmetry which resemble stick figures composed of pipe cleaners.

Marr & Nishihara (1978) argued that the parts of the body can be represented as jointed cylinders or generalised cylinders which change their size along their length (see Figure 15.21). They then showed that the cylinders which compose an object can be computed from the 2½-D sketch: the lines running down the centre of these cylinders (important in the recognition process) make up the stick figures. Once a generalised cylinder representation of objects in a scene has been computed, it can be compared with stored representations of objects in a catalogue of 3-D models, where objects are represented in 'standard' orientations (Garnham, 1991).

Evaluation of Marr's theory

- According to Harris & Humphreys (1995), Marr was the first to popularise the computational approach, and his framework remains the widest-ranging computational account of visual object recognition. Marr's work is regarded by many as the most important development in perception theory in recent years (Gordon, 1989).
- Marr & Hildreth (1980) have shown that Marr's model does what it claims to do, broadly speaking. But this doesn't mean that biological vision systems necessarily work in the same way (Roth, 1995). The main evidence supporting the relevance of Marr's model to biological vision comes from the neurophysiological studies of Hubel and Wiesel (see Chapter 5).
- The general claim that the early stage of vision consists of a representation of simple components, such as edge segments, is generally accepted (Roth, 1995). But the least well supported stage is the 3-D model, since the

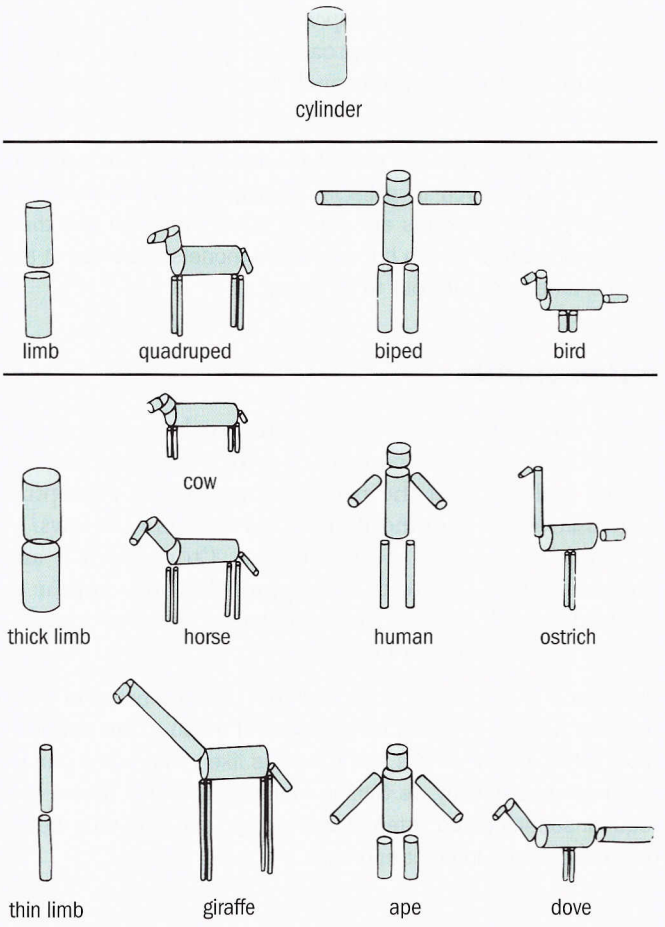


Figure 15.21 Cylinders of various sizes can be combined to represent the shapes of various (parts of) objects (from Marr & Nishihara, 1978)

early stages make only very general assumptions about the structure of the external world and don't require knowledge of specific objects. Although a bottom-up approach isn't an inevitable consequence of the computational approach, it has dominated recent research. This is partly because it's easier to derive computational theories from the early stages of perception, where the relationships between the stimulus and the world are much easier to specify (Harris & Humphreys, 1995).

- Gardner (1985), too, has argued that most of Marr's theory focuses on the steps prior to recognition of real objects in the real world ('the most central part of perception'):

> ... the procedures [Marr] outlined for object recognition may prove applicable chiefly to the perception of figures of a certain sort, for example, the mammalian body, which lends itself to decomposition in terms of generalised cylindrical forms.

- Researchers are beginning to reconsider whether top-down, domain-specific knowledge might be used. This trend has been encouraged by *connectionist models of visual perception* (see Chapter 20) and Biederman's (1987) *recognition-by-components theory* (see Chapter 14). Marr's general approach to perception, and his argument for computational theories, is, according to Harris & Humphreys (1995):

> ... likely to remain as one of the most important contributions of research in artificial intelligence to psychological theory. Such theories are able to guide empirical and theoretical research, even if the detailed models specified at any one time later turn out to be wrong.

CONCLUSIONS

Form and depth perception, perceptual constancy and visual illusions are all concerned with perceptual organisation, and many of the principles governing perceptual organisation are commonly referred to as Gestalt laws.

While Gregory's constructivist ('top-down') and Gibson's direct ('bottom-up') approaches may appear to contradict each other, it's possible to see them as complementary. According to Harris (1998):

> Perception is not just a single task but ... contributes in many different ways to everyday life ... Some of these ... are obviously more difficult than others and it seems likely that some can be accomplished directly, as Gibson maintained, whilst others may require sophisticated internal knowledge and are thus better described by the indirect approach.

CHAPTER SUMMARY

- **Sensation** involves physical stimulation of the sense organs, while **perception** is the **organisation** and **interpretation** of incoming sensory information.
- **Gestalt psychologists** identified innately determined principles through which sensory information is interpreted and organised. The most basic of these is **form perception**, which organises incoming sensory information into **figure and ground**.
- Laws for **grouping** stimuli together all rest on the belief that 'the whole is greater than the sum of its parts'. These laws can be summarised under Koffka's **law of prägnanz**. Major Gestalt laws of perception include **proximity**, **similarity**, **continuity**, **closure**, **part–whole relationship**, **simplicity**, and **common fate**.
- The various 'laws' are merely descriptive and often imprecise and difficult to measure. Despite empirical support, Gestalt laws are difficult to apply to 3-D perception and to whole scenes (they lack **ecological validity**).
- **Depth perception** allows us to estimate the distance of objects from us. **Pictorial cues** refer to aspects of the visual field, and are **monocular**. **Non-pictorial cues** include **convergence** and **retinal disparity**, which are **binocular**.
- **Perceptual constancy** refers to the ability to recognise an object as unchanging despite changes in its **size**, **shape**, **location**, **brightness** and **colour**.
- Four main kinds of **perceptual illusion** are **distortions/geometric illusions**, **ambiguous/reversible figures**, **paradoxical figures** and **fictions**. Other illusions include those involving **apparent movement** and **shading**.
- According to **top-down** (**conceptually driven**) perceptual processing theorists, perception is the end result of an indirect process that involves making inferences about the world, based on knowledge and expectations. **Bottom-up** (**data-driven**) theorists argue that perception is a **direct** process, determined by the information presented to the sensory receptors.
- According to **Gregory's constructivist theory**, we often **supplement** perception with **unconscious inferences**. His **misapplied size constancy theory** claims that we interpret the ingoing and outgoing fins of the arrows in the Müller–Lyer illusion as providing perspective cues to distance.
- **Perceptual set** acts as a **selector** and **interpreter**, and can be induced by **perceiver/organismic** and **stimulus/situational variables**. Perceiver variables include expectations, which often interact with context.
- According to **Gibson**, the **optic array** provides information about the layout and properties of objects in space requiring little or no (unconscious) information

processing, computations or internal representations. **Optic flow patterns**, **texture gradients** and **affordances** are all **invariant**, unchanging and 'higher-order' features of the optic array.

- Gibson overlooked the role of **culturally determined knowledge** in perception. He also failed to distinguish between **seeing** and **seeing as**, the latter forming the basic principle of **transactionalism**.
- Both Gibson and Gregory agree that perception is an active process, influenced by learning (making them **empiricists**), although they propose different kinds of learning. Gibson is also a **nativist** in certain respects and was influenced by the Gestalt psychologists.
- Bottom-up processing (Gibson) may be crucial under **optimal viewing conditions**, but under **sub-optimal conditions**, top-down processing (Gregory) becomes increasingly important.
- According to **Neisser's analysis-by-synthesis model**, perception is an **interactive** process, involving both bottom-up feature analysis and top-down expectations (appearing at different stages of a perceptual cycle).
- **Marr's computational theory** states that vision's main function is to derive a representation of object **shape** from information in the retinal image. This is achieved via a series of four increasingly complex stages/modules: the **image/grey-level description**, the **primal sketch**, the **2½-D sketch**, and the **3-D model representation/object recognition**.
- 3-D descriptions are often derived from the 2½-D sketch, using stick-figure representations composed of the lines running down the centre of jointed or generalised cylinders.
- It's easier to derive computational theories from the early (bottom-up) stages of perception, and the 3-D model representation (which involves top-down processes) is the least well supported.

Links with other topics/chapters

- Although perception may require *sensation*, it's commonly distinguished from it. However, there are some important areas of overlap, as in *non-pictorial depth cues*, *colour* and *brightness constancy*, and the importance of *eye movements* (Chapter 5).
- All the major theories of perception, and in particular the Gestalt principles of perceptual organisation, can be seen as concerned with *pattern recognition* (Chapter 14).
- Most theories of perception can be classified as *empiricist*, the main exception being the Gestalt theory, which is *nativist* (Chapter 50).
- The Gestalt psychologists contributed to early research into *problem-solving* (Chapter 20).
- Gestalt principles have also had a considerable impact on many aspects of *social psychology*, in particular *social perception* (interpersonal perception/the perception of other people: Chapter 22), *attribution theory* (Chapter 23) and *theories of attitude change* (Chapter 24).

Overview of the research
- An evaluation of the research methods
- What general conclusions can we draw?

Studies of human cataract patients
- Evaluation of cataract patient studies

Non-human animal experiments
- Evaluation of non-human animal experiments

Perceptual adaptation/readjustment studies
- Evaluation of adaptation studies

Studying neonate and infant visual perception
- The perceptual equipment of babies
- The perceptual abilities of babies
  - *Pattern (or form) perception*
  - *The perception of human faces*
  - *Depth perception*
  - *The perception of 3-D objects*
  - *Perceptual organisation: constancies and Gestalt principles*

Cross-cultural studies
- Studies using visual illusions
  - *The carpentered world hypothesis*
- Studies of other perceptual phenomena
  - *'Reading' pictures*

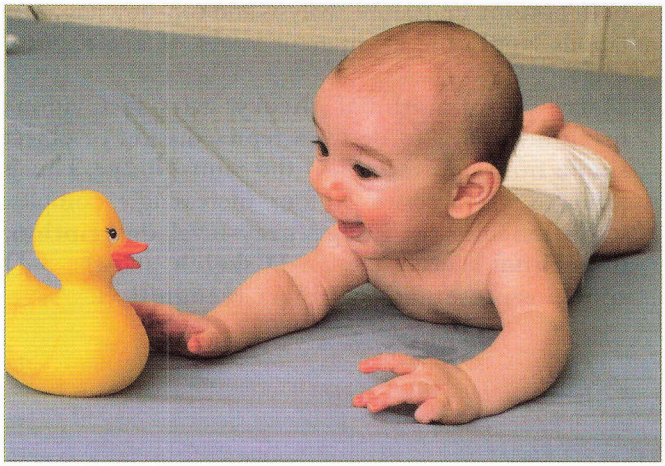
Conclusions: nature, nurture or an interaction?

Chapter summary

Links with other topics/chapters

16

THE DEVELOPMENT OF PERCEPTUAL ABILITIES

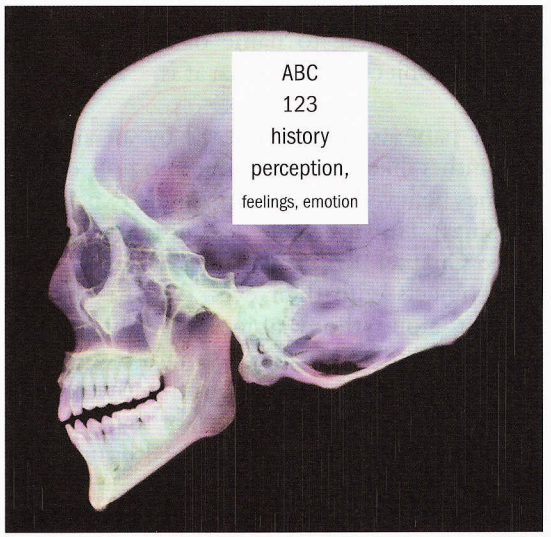


INTRODUCTION AND OVERVIEW

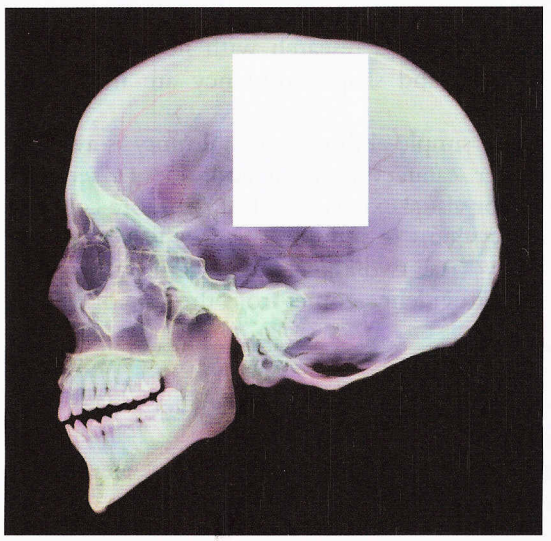
Chapters 5 and 15 showed that visual perception is a complex set of interconnected and overlapping abilities, including perception of depth, shape and movement. Whether these are present at birth or develop through experience has been one of psychology's most enduring debates. This chapter examines the evidence concerning the development of visual perception.

In Chapter 15, we distinguished between *nativists* and *empiricists*. While these terms originally denoted philosophical schools of thought (see Chapters 1 and 3), they're still used in the context of psychological debates regarding the origins of human abilities, such as language (see Chapter 19) and perception. Nativists are 'naturists', who believe that we're born with certain capacities to perceive the world in particular ways. These abilities may take time to appear, but they do so through the genetically determined process of maturation, with little or no learning being involved (see Chapter 50). Empiricists, by contrast, are 'nurturists', maintaining that all our knowledge and abilities are acquired through experience; that is, they're learned. For Locke (1690), the mind at birth is a blank slate (or *tabula rasa*) on which experience 'writes'. Locke's belief was supported by James (1890), according to whom:

> The baby, assailed by eyes, ears, nose, skin and entrails at once, feels it all as one great booming, buzzing confusion.



Nativist



Empiricist

Most present-day psychologists wouldn't take such extreme views. They'd probably consider themselves to be *interactionists*, believing that while we may be born with certain capacities, environmental influences are crucial for determining how – and even whether – these capacities actually develop. Although particular abilities may be more affected by genetic or environmental influences, *all* abilities are the product of an interaction between both sets of factors.

In a different sense, empiricists are also interactionists. Segall (1994) says that every perception is the result of an interaction between a stimulus and a perceiver, shaped by prior experience. This is essentially a 'top-down' view consistent with Gregory's theory (see Chapter 15). But it also helps to underline an important, but rarely acknowledged, similarity between those who favour the nativist or empiricist approaches: the perceiver isn't a passive responder to external stimuli, but in some way contributes to, and influences, the perceptual experience.

OVERVIEW OF THE RESEARCH

ASK YOURSELF...

- What do you consider might be the main advantage and disadvantage of studying (a) newborn babies and (b) non-human animals in trying to understand the development of perceptual abilities?

An evaluation of the research methods

- Investigating the perceptual abilities of newborn babies (or *neonates*) represents the most direct way of investigating the nature–nurture issue. In general, the earlier a particular ability appears, the more likely it is to be under the influence of genetic factors. But the fact that it develops some time after birth doesn't necessarily mean it's been learnt: it could take time to mature. However, there are other special difficulties involved in studying speechless participants.
- *Non-human animal experiments* often involve depriving animals of normal sensory and perceptual stimulation, and recording the long-term effects on their sensory and perceptual abilities. Others study how animals' brains control perceptual abilities. From a research point of view, the main advantage of studying animals is that we can manipulate their environments in ways that aren't permissible with humans. Deprivation studies can tell us how much and what kinds of early experience are necessary for normal perceptual development in those species being studied. But we must be very cautious about generalising these findings to humans. We must also be aware of the ethical objections to such research (see Chapter 48).
- Studies of *human cataract patients* represent the human counterpart to non-human deprivation experiments. These patients have been deprived of normal visual

experience through a physical defect, rather than through experimental manipulation/interference, and constitute a kind of 'natural experimental group'. Their vision is restored through surgical removal of the cataract, and the abilities that are evident immediately after removal of the bandages are normally taken to be unlearned. However, generalising from 'unusual' adults can be misleading.

- In studies of *perceptual adaptation/readjustment*, human volunteers wear special goggles which distort the visual world in various ways. If they can adapt to such a distorted-looking world, then human 'perceptual habits' cannot be as fixed or rigid as they would be if they were under genetic control. However, the adaptation involved may be motor, rather than perceptual, that is, learning to move about successfully in a very different-looking environment. If this is the case, then we cannot be sure that our perceptual 'habits' are habits at all (learned in the first place), but only that we're good at changing our body movements to 'match' what we see.
- *Cross-cultural studies* attempt to test whether or not the way that people in western culture perceive things is universal, that is, perceived in the same way by people who live in cultures very different from our own. The most common method of testing is to present members of different cultural groups with the same stimulus material, usually visual illusions. Cross-cultural studies prevent us from generalising from a comparatively small sample of the earth's population (Price-Williams, 1966: see Chapter 47). Consistent differences between different cultural groups are usually attributed to environmental factors of some kind. Such studies, therefore, enable us to discover the extent to which perceiving is structured by the nervous system (and so common to all human beings), and to what extent by experience. But, as we'll see, psychologists cannot agree as to the key features of such cultural experience.

What general conclusions can we draw?

As we noted in the *Introduction and overview*, most psychologists are interactionists. However, some attempts have been made to test directly the merits of the nativist and empiricist positions, particularly in relation to neonates and infants. Most of the evidence supporting the nativist view derives from infant studies. Recall that the earlier a particular ability appears, the less likely it is to have been learned, and so the more likely it is to be under genetic control.

Although the bulk of the evidence supports the interactionist position, there are grounds for concluding that relatively simple perceptual abilities are controlled more by genes and less susceptible to environmental influence. The reverse is true for more complex abilities. The most clear-cut demonstration of this comes from human cataract patients, and this is where we'll begin.

ASK YOURSELF...

- Looking back at Chapters 5 and 15, identify some examples of what you think may count as simple and complex visual abilities.
- What determined your choice; in other words, what makes them simple or complex?

STUDIES OF HUMAN CATARACT PATIENTS

Most of the evidence comes from the work of von Senden (1932), a German doctor, who reported on 65 cases of people who'd undergone cataract-removal surgery between 1700 and 1928. A cataract is a film over the lens of the eye, which prevents normal (patterned) light from entering the eye. Cataracts can be present at birth or develop any time afterwards, and their removal 'restores' vision.

Hebb (1949) re-analysed von Senden's data in terms of:

- *figural unity*, the ability to detect the presence of a figure or stimulus, and
- *figural identity*, being able to name or in some other way identify the object, to 'say' what it is.

Initially, cataract patients are bewildered by an array of visual stimuli (rather like the 'booming, buzzing confusion' which James believed was the perceptual experience of newborn babies). However, they can distinguish *figure from ground* (see Chapter 15), *fixate* and *scan* objects, and follow moving objects with their eyes. But they cannot identify by sight alone those objects already familiar through touch (including faces), distinguish between various geometrical shapes without counting the corners or tracing the outline with their fingers, or say which of two sticks is longer without feeling them (although they can tell there's a difference).

They also fail to show *perceptual constancy*. For example, even after recognising by sight alone a sugar lump held in someone's hand, patients may be unable to identify it correctly if it's suspended from a piece of string. This is contradicted by Bower's research with neonates, which suggests that size and shape constancy are innate: see pages 275–276.

So, the more simple ability of figural unity is available very soon after cataract removal and doesn't seem to depend on prior visual experience. But the more complex figural identity seems to require learning. Hebb believes that this is how these two aspects of perception normally develop. Further evidence comes from the case of S.B.

CASE STUDY 16.1: S.B. (Gregory & Wallace, 1963)

- S.B. was 52 when he received his sight after a corneal graft operation.
- His judgement of size and distance was good, provided he was familiar with the objects in question.

- Unlike most of the cases studied by Hebb, he could recognise objects visually if he was already familiar with them through touch (he displayed good *cross-modal transfer*).
- However, he seemed to have great difficulty in identifying objects visually if he wasn't already familiar with them in this way. A year after his operation, he still couldn't draw the front of a bus although the rest of the drawing was very well executed (see Figure 16.1).
- As the months passed, it became clear that S.B. was in some ways like a newborn baby when it came to recognising objects and events by sight alone. For instance, he found it impossible to judge distances by sight alone. He knew what windows were, from touching them both from inside a room and from outside (while standing on the ground). But, of course, he'd never been able to look out from a top-floor window, and he thought 'he would be able to touch the ground below the window with his feet if he lowered himself by his hands'. The window in question was the one in his hospital room – 40 feet above the ground!
- He never learnt to interpret facial expressions such as smiles and frowns, although he could infer a person's mood from the sound of their voice. He preferred to sit in the dark all evening, instead of putting on the light.



Figure 16.1 This was drawn after S.B. had had some experience of sighted travel. Basically it shows the parts he knew by touch but clearly he had also, by this time, noticed the bright advertisement for Typhoo Tea on the side of the bus

Evaluation of cataract patient studies

- Adult patients aren't the same as babies. While infants' sensory systems are all relatively immature (see page 271), adults have other well-developed sensory modalities which tend to compensate for the lack of vision (especially touch and hearing). These other channels may actually hinder visual learning, because the patient may have to 'unlearn' previous experience. For example, S.B.'s continued preference for touch over vision may reflect a tendency to stick with what's familiar, rather than experiment with the unknown. This may be a safer conclusion to draw than Hebb's, which is that figural identity is (normally) learned.
- Traditionally, cataract patients haven't been adequately prepared for their 'new world of vision'. The resulting confusion and general emotional distress following the operation may make it difficult to be sure just what they can and cannot see. When blind, S.B. would cross the street on his own. But once he could *see* the traffic, it frightened him so much that he refused to cross on his own. In fact, he died three years after his operation, at least partially from depression. Depression was also common amongst von Senden's cases.
- Some physical deterioration of the visual system may have occurred during the years of blindness. This could account for the absence of figural identity, rather than lack of visual stimulation and learning (as Hebb maintains).
- The reliability of the case histories themselves is open to doubt. There's great variability in the ages of the patients, when they underwent surgery, and when their cataracts first appeared, and hence in the amount of their previous visual experience.

NON-HUMAN ANIMAL EXPERIMENTS

Riesen (1947) deprived one group of chimps of light by raising them in darkness, except for several 45-second periods of exposure to light while they were being fed. This continued until they were 16 months old, when they were compared with a group of normally reared chimps. The deprived group showed pupil constriction to light, and were startled by sudden, intense illumination. But they didn't blink in response to threatening movements made towards their faces, or show any interest in their toys unless they accidentally touched them.

Weiskrantz (1956) pointed out that the deprived group's visual deficiencies were probably due to failure of the retinas to develop properly, as a result of insufficient light stimulation. Riesen's experiment, therefore, may show only that a certain amount of light is physically necessary to maintain the visual system and allow it to mature normally.

In response to these criticisms, Riesen (1965) reared three chimps from birth to seven months of age, under three different conditions:

- Debi spent the whole time in darkness
- Kova spent 1½ hours per day exposed to *diffuse* (or unpatterned) light by wearing translucent goggles; the rest of the time was spent in darkness.
- Lad was raised in normal lighting conditions.

ASK YOURSELF...

- What do you think the outcome of this experiment was?
- For example, which chimp suffered retinal damage, and what effects might exposure to unpatterned light have had?

As expected, only Debi suffered retinal damage. Lad was no different, perceptually, from any other normally reared chimp. It was Kova who was of special interest, because she was only exposed to unpatterned light (patches of different colours and brightnesses – not distinguishable shapes or patterns), but without suffering any retinal damage. Her perceptual development was noticeably retarded.

These, and similar experiments with monkeys, chimps and kittens, suggest that:

- light is necessary for normal physical development of the visual system (at least in chimps, some monkeys and kittens)
- patterned light is also necessary for the normal development of more complex visual abilities (in those species), such as following a moving object, differentiating between geometrical shapes, perceiving depth and distinguishing a moving from a stationary object.

KEY STUDY 16.1 Kitten carousel experiment (Held & Hein, 1963)

- Held and Hein used a kitten carousel to study kittens' ability to guide their movements using vision (see Figure 16.2).
- For their first eight weeks, kittens were kept in darkness. They then spent three hours each day in the carousel, the rest of the time being spent in darkness.
- The 'active' kitten could move itself around (its legs were free), and its movements were transmitted to the 'passive' kitten via a series of pulleys. Every time the active kitten moved, the passive kitten moved the same distance, at the same speed. Since the visual environment was constant, both kittens had exactly the same visual experience.

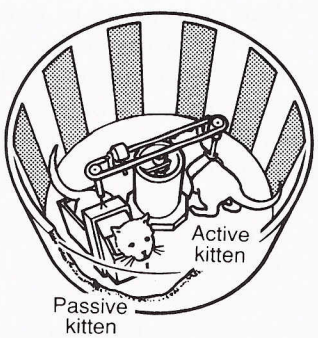


Figure 16.2 The kitten carousel (from Held, 1965)

- When paw–eye coordination was tested several weeks later, the passive kittens were markedly inferior. For example, they showed no evidence of depth perception when placed on the deep side of the visual cliff apparatus (see text below and Figure 16.9).
- However, the passive kittens soon learned the normal avoidance responses on the deep side of the cliff when allowed to run around in a lighted environment.
- This suggests that what they'd failed to learn were the correct motor responses associated with depth perception (sensorimotor coordination), rather that depth perception as such (see the section on perceptual readjustment studies below).

Other animal experiments have also shown the impact of early experience on perceptual abilities.

Blakemore & Cooper (1970) raised kittens from birth in darkness, except for a five-hour period each day when they were placed in a large round chamber. This had either vertical or horizontal stripes painted on the inside, and a glass floor which reflected the pattern of stripes. The kittens wore special collars which prevented them from seeing their own bodies, and the stripes were the only visual stimuli they encountered.

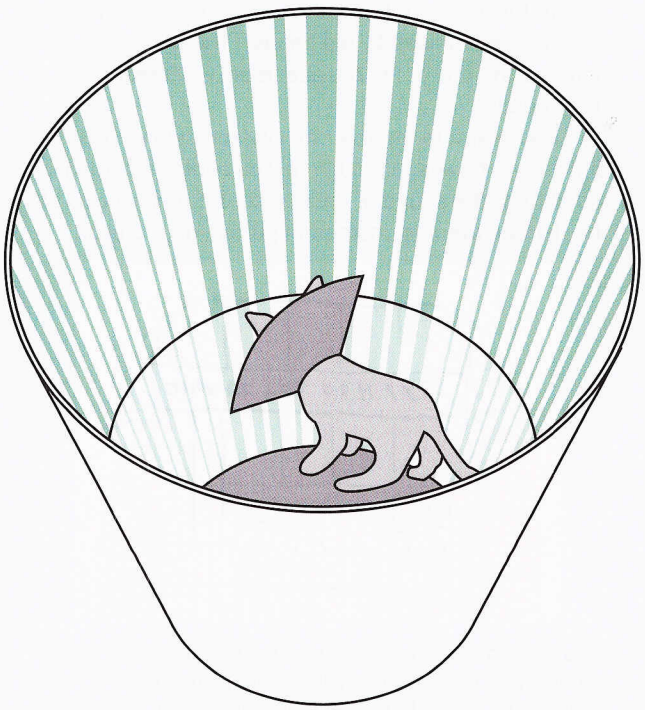


Figure 16.3 The 'vertical' world used in Blakemore & Cooper's (1970) experiment

At five months old, the kittens were tested for line recognition by being presented with a moving pointer held either vertically or horizontally. Those reared in the 'vertical world' would reach out only to a vertical pointer, while those raised in the 'horizontal world' reached only for a horizontal pointer. Depending on their early visual experience, the kittens acted as if they were blind in the presence of the other kind of visual stimulus.

This 'behavioural blindness' mirrored 'physiological blindness'. By placing microelectrodes into individual cells in the visual cortex, Blakemore and Cooper found that the 'vertical' kittens didn't possess cells that were responsive to bars of light moved horizontally, and the reverse was true for the 'horizontal' kittens. The only receptive

fields to have developed were those which reflected the kittens' early visual experience (see Chapter 5).

However, this doesn't show conclusively that responding to lines at different angles develops solely through environmental influence. It's possible that receptive fields for all angles are present at birth, but that where a kitten sees only vertical lines, those fields which would otherwise have responded to horizontal lines are 'taken over' by vertical fields. Nevertheless, these findings suggest very strongly that the environment is important in the development of at least certain kinds of perceptual ability in some species: in kittens, perception does seem to be at least partly learned.

Evaluation of non-human animal experiments

- A general problem with non-human animal studies (as with studies of human infants) is that we can only *infer* their perceptual experiences through observing their behaviour or their physiological responses. They're unable to tell us more directly what they can or cannot see.
- We cannot be certain that animals deprived in particular ways don't perceive particular stimuli, only that they don't *behave* as if they do. It's possible that certain perceptual abilities have developed, but if they've not become linked to the animal's behaviour, we may have no way of knowing.

ASK YOURSELF...

- Do you consider the experiments by Riesen, Held and Hein, and Blakemore and Cooper to be ethically acceptable?
- What kinds of scientific justification could be made in their defence?

PERCEPTUAL ADAPTATION/READJUSTMENT STUDIES

If it can be shown that people are capable of perceiving the world in a different way from normal, and adjusting to this altered perception, then perception is probably learned. The greater the degree of adaptation, the more significant the role of learning is taken to be. Neither salamanders (Sperry, 1943) nor chickens (Hess, 1956) show any evidence of being able to adapt to distorted perceptions, suggesting that genetic factors largely control their perceptual abilities.

One of the earliest recorded human studies was that of Stratton. (See Key Study 16.2.)

KEY STUDY 16.2 Turning the world upside down (Stratton, 1896)

- Stratton fitted himself with a telescope on one eye which 'turned the world upside down'. The other eye was kept covered.
- He wore the telescope for a total of 87 hours over an eight-day period, wearing blindfolds at night and at other times when not wearing the inverting lens.
- As far as possible, Stratton went about his normal routine.
- For the first three days, he was aware that part of his environment – the part not in his immediate field of vision but on the periphery – was in a different orientation.
- But by day four, he was beginning to imagine unseen parts as also being inverted, and by day five he had to make a conscious effort to remember that he actually had the telescope on. He could walk round the house without bumping into furniture, and when he moved his surroundings looked 'normal'.
- However, when he concentrated hard and remained still, things still appeared upside down.
- By day eight, everything seemed 'harmonious'; he began to 'feel' inverted, but this was quite normal and natural to him.

When Stratton removed the telescope, he immediately recognised the visual orientation as the one that existed before the experiment began. He found it surprisingly bewildering, although definitely *not* upside-down. This absence of an inverted after-image/after-effect means that Stratton hadn't actually learnt to see the world in an upside-down fashion. If he had, removal of the telescope would have caused the now normal (right-way-up) world to look upside-down again! Instead, it suggests that the adaptation took the form of learning the appropriate *motor responses* in an upside-down-looking world. (Compare this with the question of depth perception in Held and Hein's kittens: see Key Study 16.1.) But Stratton did experience an after-effect which caused things before him to 'swing and sweep' as he moved his eyes, showing that *location constancy* had been disrupted.

In another experiment, Stratton made goggles which visually displaced his body, so that he always appeared

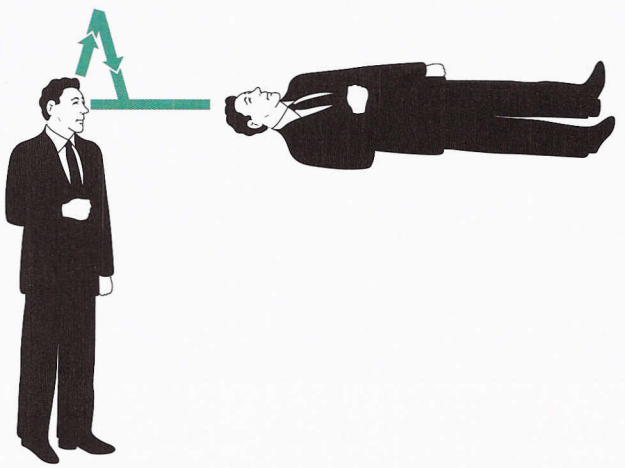


Figure 16.4 One of Stratton's experiments in which goggles displaced the wearer's body image at right angles

horizontally in front of himself (see Figure 16.4). Wherever he walked, he 'followed' his own body image, which was suspended at right angles to his actual body. When he lay down, his body would appear above him, vertically, again at right angles. After three days, he was able to go out for a walk on his own – and lived to tell the tale!

Gilling & Brightwell (1982) replicated Stratton's inverted goggles experiment.

CASE STUDY 16.2: Susannah Fienues (Gilling & Brightwell, 1982)

Susannah Fienues, a young art student, wore inverted goggles for a period of seven days. After first putting them on she reported:

The cars are going upside down. They're going the wrong way. It's all going completely the wrong way to what you'd expect. It's really strange.

After one hour, she reported:

In fact, looking at people in cars was quite normal, I didn't think they were upside down, and I just got adjusted to it, I think. But the difficult thing is just walking and being very disorientated, because how you feel is completely different to what you're doing ... As for things being upside down, it just doesn't feel like that at all because I know very well that I'm sitting here and so I think my brain still knows that, so it's all right.

Like Stratton, she at first had great difficulty in pouring milk from a jug into a glass. By the fourth day, she could walk without difficulty, from the bedroom to the sitting room. And she could now pour the milk! She felt 'Just fine ... I don't notice that things are upside down at all.' She could write her name normally, but only if she closed her eyes and didn't see her hand as she wrote it. With her eyes open, she could write it so that it appeared normal to her but inverted to anyone else!

By day seven her early problems seemed to have vanished – she could ride her bike, walk, run, climb stairs, turn corners, make coffee and put records on.

The only thing that's still quite difficult is eating and using a knife and fork.

Again:

It's become more and more difficult to imagine myself standing upright or sitting down normally. I almost want to sit upside down because I can't quite imagine myself sitting normally.

This account supports the view of vision as an active process, enabling us to deal with the world. When Susannah removed the goggles, she was annoyed that nothing seemed any different! She reverted to normal vision within a few minutes, very relieved that the experiment was over. Like Stratton, she learnt to match her vision with signals reported by the rest of her body. According to Gilling and Brightwell:

She was not just seeing, but sampling the world as a whole with her senses, and organising them so that they told stories which could be sensibly related to each other. She saw with her whole body, the whole apparatus of her senses, as it were, and not just with her eyes ...

Snyder & Pronko (1952) made goggles which inverted and reversed the visual world. Their volunteers wore them continually for 30 days and adapted to the changes. Two years after the experiment, these participants coped just as well when refitted with the goggles as first-time participants at the end of the 30-day period. This shows that motor adaptations are extremely resistant to forgetting.

ASK YOURSELF...

- What conclusions can you draw from adaptation studies?

Evaluation of adaptation studies

- When volunteers adapt to a distorted perceptual world, they're not, for the most part, actually learning to see 'normally', but are developing the appropriate *motor behaviour* which helps them to get around and function efficiently in their environment. What's learnt is not a new way of perceiving the world, but a new set of body movements.
- The visual system, at least in adults, is extremely *flexible*, and can adjust to distorted conditions. This strongly suggests that learning plays an important role in perceptual development, since a totally or largely innate system wouldn't allow such adaptation to occur.
- The volunteers are adults, who've already undergone a great deal of learning and in whom maturation has already taken place. This makes it difficult to generalise from these studies to how babies develop under normal circumstances.

STUDYING NEONATE AND INFANT VISUAL PERCEPTION

Before looking at the perceptual world of the human neonate, we need to be familiar with some of the methods that have been used in this area.

Box 16.1 Some methods used to study neonate and infant perception

Spontaneous visual preference technique (or **preferential looking**): Two stimuli are presented simultaneously to the neonate. If more time is spent looking at one, it can

reasonably be assumed that (a) the difference between the stimuli can be perceived, and (b) the stimulus which is looked at longer is preferred.

Sucking rate: A dummy (or pacifier) is used and the sucking rate in response to different stimuli is measured. First, a baseline sucking rate is established, and then a stimulus introduced. The stimulus may produce an increase or decrease in sucking rate but, eventually, *habituation* will occur, and the baby will stop responding. If the stimulus is changed and another increase or decrease in sucking rate occurs, it can be inferred that the baby has responded to the change as a novel stimulus, and hence can tell the difference between the two stimuli.

Habituation: This is used as a method in its own right. If an external stimulus and a baby's representation of it match, then the baby presumably recognises the stimulus. This will be reflected by the baby ignoring it. Mismatches will maintain the baby's attention, so that a novel (and discriminable) stimulus presented after habituation to a familiar stimulus re-excites attention (the baby starts responding again).

Conditioned head rotation: The infant is *operantly conditioned* (see Chapter 11) to turn its head in response to a stimulus. The stimulus can then be presented in a different orientation, and the presence or absence of the conditioned response recorded. It's been used to test for *shape constancy* (see page 276) and in *auditory perception* (Bornstein, 1988).

Physiological measures: If a physiological change (such as heart rate or breathing rate) occurs when a new stimulus is presented, it can be inferred that the infant can discriminate between the old and new stimuli.

Measures of electrical activity in the brain: By using electrodes attached to the scalp, researchers can look for visually evoked potentials (VEPs) occurring in response to particular stimuli. If different stimuli produce different VEPs, the infant can presumably distinguish between those stimuli. A recent piece of equipment used for doing this is the 'geodesic hair-net' (see Chapter 4, page 61).

The perceptual equipment of babies

At birth, the whole nervous system is immature. The optic nerve is thinner and shorter than in adults, and the myelin sheath won't be fully developed until about four months. As a result, visual information is transmitted less effectively to the immature cortex. Also, at birth a baby's eye is about half the size and weight of an adult's, and the eyeball is shorter. This reduces the distance between the retina and lens, making vision less efficient. So, although the new-born's eyeball is anatomically identical to an adult's, the relationship between the parts is different, and they don't develop at the same rate (see Chapter 5, pages 80–82).

Box 16.2 What can babies see?

Colour perception: The retina, rods and cones are reasonably well developed at birth. Using habituation, Bornstein (1976) found that in the absence of brightness cues, three-month-old babies could discriminate blue-green from white, and yellow from green (tests which are typically failed by those who are red–green colour blind). Most babies possess largely normal colour vision at two months, and some as early as one month (Bornstein, 1988).
Brightness: The fovea is also reasonably well developed at birth. The developing foetus reacts to bright light, and the pupillary reflex is present even in premature babies, with the blink reflex present at birth. These findings suggest that a baby's sensitivity to brightness is reasonably similar to an adult's.
Movement: The *optokinetic reflex* (or *optic nystagmus*), which enables us to follow a moving object, is present within two days of birth. While less efficient than an adult's, it improves rapidly in the first three months. Horizontal movement is better tracked than vertical movement, but is still 'jerky'. This may be because convergence (essential for fixation and depth perception) is absent at birth, although fully developed by two to three months. *Accommodation* reaches adult standards by about four months, probably due to maturation (see Chapter 15, page 248).
Visual acuity: The threshold of visual acuity (the ability to discriminate fine detail) is about 30 times poorer than in adults and, at birth, everything beyond 20 centimetres is seen as a blur (Gwiazda *et al.*, 1980). However, babies aged one to three months will learn to suck on a nipple connected to the focus on a projector to bring a blurred picture into focus (Kalnins and Bruner, 1973). Between 6 and 12 months, visual acuity comes within adult range (20/20 vision: Haith, 1990; Slater, 1994).

The perceptual abilities of babies

According to Schaffer (2004), any deficiencies that exist in the newborn's visual system are soon made up as a result of visual experience ('Looking … is improved by looking'). But babies aren't merely passive recipients of stimulation:

> … from a very early age on they can be observed actively to explore their environment with their eyes, looking for interesting sights and in this way supplying their own stimulation … (Schaffer, 2004)

Pattern (or form) perception

Using the preferential looking technique, Fantz (1961) presented one- to 15-week-old babies with pairs of stimuli (see Figure 16.5). The stimuli were presented at weekly intervals, and Fantz measured how long the babies spent looking at each. There was a distinct preference for more complex stimuli; that is, stimuli which

contain more information and in which there's more 'going on'. According to Fantz:

> The relative attractiveness of the two members of a pair depended on the presence of a pattern difference. There were strong preferences between stripes and bull's-eyes and between checkerboard and square. Neither the cross and circle nor the two triangles aroused a significant differential interest. The differential response to pattern was shown at all ages tested, indicating that it was not the result of a learning process.

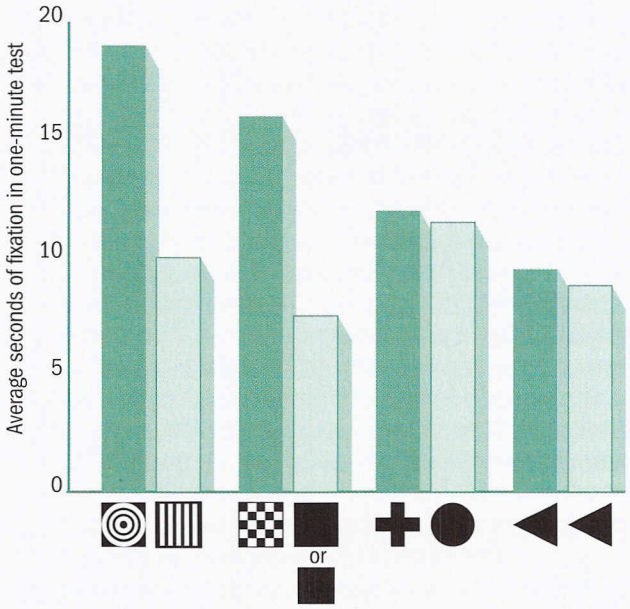


Figure 16.5 Average time spent looking at various pairs of stimulus patterns in babies aged one to 15 weeks. (From Fantz, 1961)

This preference for complexity is apparently a function of age. The babies tested at weekly intervals could discriminate between stimuli with progressively narrower stripes. Later, Fantz showed that two- to four-month-old babies prefer patterns to colour or brightness, as shown in Figure 16.6.

The preference for increasing complexity suggests that the baby's capacity for differentiation steadily improves. Possibly this is because its ability to scan becomes more efficient and thorough. Support for this comes from studies showing that very young infants confine their scanning to one corner of a triangle, suggesting a preference for areas of greatest contrast (Salapatek, 1975). Only later does the baby begin to explore all around the stimulus and inside it, and attend to the whole pattern and not just specific parts. Before two months of age, neonates probably discriminate between shapes on the basis of *lower-order variables*, such as orientation and contrast (Slater & Morison, 1985). But after two months, 'true form perception' begins (Slater, 1989), and babies respond to *higher-order variables* (such as configurational invariance and form categories).

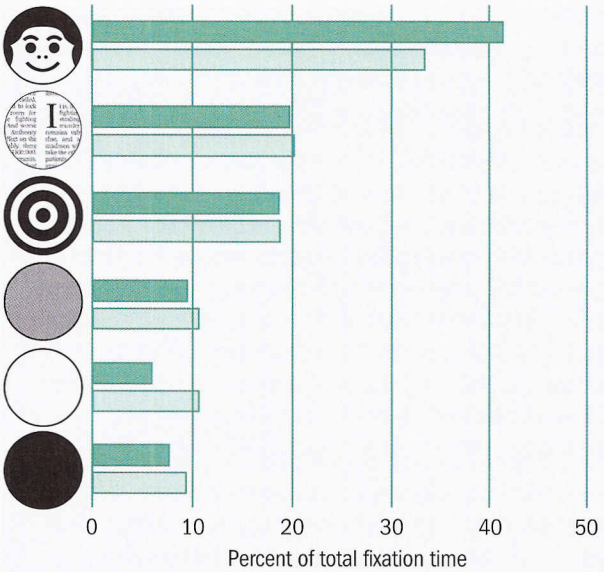


Figure 16.6 Preference for complex stimuli over simple stimuli. The dark green bars show the percentage of fixation time for two- to three-month-olds. The light green bars show the percentage of fixation time for four-month-olds (from Fantz, 1961)

The perception of human faces

ASK YOURSELF...

- Can you think of any reasons why it would be a 'good idea' for babies to have an inborn knowledge of/preference for faces?
- What is it about faces that babies are likely to find particularly attractive?

Eye movements already occur in the womb and in the dark, so they aren't just a reaction to being stimulated. Rather, they're a sign that babies are born prepared to explore their visual world. This exploration is far from being a random process. Babies have quite specific attentional preferences and will scan their surroundings in an active search for those features of their visual world that matter to them. This is best illustrated by their interest in the human face (Schaffer, 2004).

The human face is three-dimensional, contains high-contrast information (especially the eyes, mouth and hairline), constantly moves (the eyes, mouth and head), is a source of auditory information (the voice), and regulates its behaviour according to the baby's own activities. Thus, the human face combines complexity, pattern and movement (it's a *supernormal stimulus*: Rheingold, 1961), all of which babies appear innately to prefer. As Schaffer (2004) says:

> ... It is as though nature has ensured that babies are preadapted to attend to that aspect of their environment that is most important to their survival and welfare, namely, other people ...

A crucial question is whether preference for faces occurs because of this combination of factors, or whether there's an innate perceptual knowledge of a face *as a face*.

Fantz (1961) presented babies aged between four days and six months with all possible pairs of the three stimuli shown in Figure 16.7. The stimuli were coloured black, presented against a pink background, and of the approximate shape and size of an adult's head.

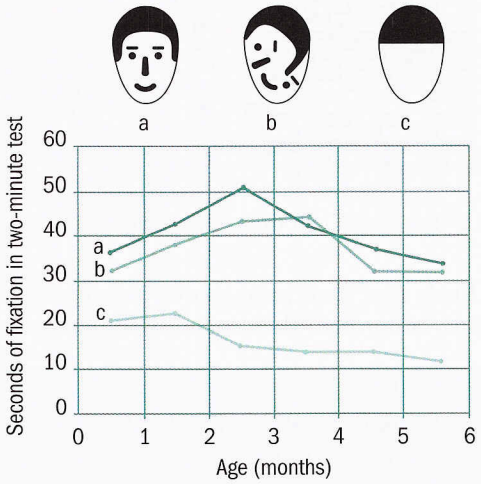


Figure 16.7 Looking times for each of the stimuli used in Fantz's study of the perception of faces (from Fantz, 1961)

Irrespective of age, the babies preferred to look at the schematic representation of a face (a) more than the 'scrambled' face (b). The control stimulus (c) was largely ignored. Even though the difference between (a) and (b) was small, Fantz concluded that 'there is an unlearned, primitive meaning in the form perception of infants', and that babies have an innate preference for 'facedness'.

But according to Bremner (2003), (a) contained more information around the *edge* of the stimulus. This is important, because, as we noted earlier, young infants tend to scan around the *periphery* of complex stimuli. This alone could explain their preference for (a). Hershenson *et al.* (1965) argued that both (a) and (b) were more complex than (c), and this might account for Fantz's findings, rather than a preference for looking at human faces. So they presented neonates with all possible pairs of three *equally complex* stimuli:

- a real female face
- a distorted picture, which retained the outline of head and hair but altered the position of the other features
- a scrambled face (stimulus (b) in Fantz's experiment).

They found no preference for any of the three stimuli, and concluded that a preference for real faces isn't innate, and doesn't appear until about four months of age.

KEY STUDY 16.3 Early evidence of face preference (Johnson *et al.*, 1991)

- Lying on their backs, neonates (with an average age of 43 minutes) saw one of four patterned boards moved in an arc in front of their faces.
- Their eyes followed the most face-like pattern longer than the un-face-like patterns.
- Even the most face-like board was only a schematic representation, with only moderate realism. But it still contains intensity changes, which approximate (or even exaggerate) those of real faces, and for an innate mechanism, that's all that is needed (Bruce & Young, 1998).

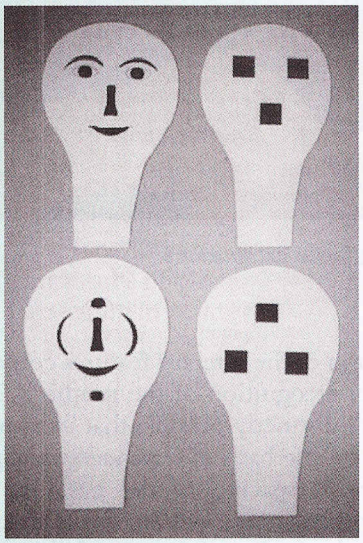


Figure 16.8 Four face-like boards

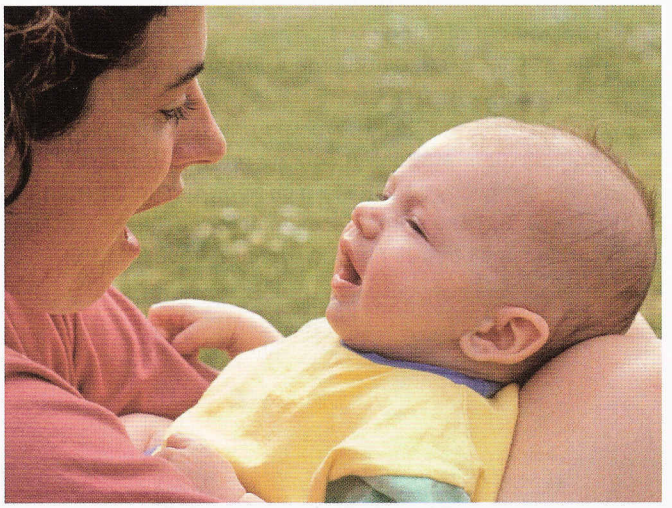
Perception of real faces

Since Hershenson *et al.*'s study, several studies have found that young babies can discriminate between their mother's face and that of a female stranger (e.g. Carpenter, 1974; Maurer & Salapatek, 1976). Even newborns with only a few hours' contact with their mother show this preference (Bushnell, 2001; Field *et al.*, 1984).

But a possible confounding variable is the infant's ability to recognise the mother through *smell*. Bushnell *et al.* (1989) controlled for this by using a strong-smelling perfume to act as an olfactory mask, and they still found the same preference for the mother among babies as young as 12–36 hours. So far, there's no evidence of a preference for their father's face over a male stranger's, even when he has spent more time with the baby than the mother has. There's no obvious explanation for this (Bee, 2000).

Meltzoff & Moore (1977) found that two- to three-week-old babies, and even newborns (1983) can imitate facial expressions, including sticking out their tongues, opening their mouths and protruding their lips. To achieve this, infants must be able to perceive the *internal*

parts of the face making the gestures, and be able to match this to the equivalent parts of their own face (Bremner, 2003).



Baby imitating facial expressions

This perception of the internal features could also explain the very early recognition of the mother's face. Bremner claims that it's distinctly possible that even newborns can discriminate on the basis of *configurational differences* (such as differences in spacing of the eyes, the relationship between eyes and nose, and so on). But this seems to conflict with the finding that young babies only scan the *outside* of a stimulus (see above) – and they would have to be exceptionally fast learners!

According to Slater (1994), the evidence indicates that:

Some knowledge about faces is present at birth, suggesting that babies come into the world with some innate, genetically determined knowledge about faces.

Depth perception

Perhaps the most famous way of investigating infants' depth perception is Gibson & Walk's (1960) *visual cliff apparatus* (see Figure 16.9). This consists of a central platform, on the *shallow* side of which is a sheet of plexiglass. Immediately below this is a black-and-white checkerboard pattern. On the *deep* side is another sheet of plexiglass, this time with the checkerboard pattern placed on the floor, at a distance of about four feet. This gives the appearance of a 'drop' or 'cliff'. The baby is placed on the central platform, and its mother calls and beckons to it, first from one side and then the other.

Gibson and Walk found that most babies aged between 6 and 14 months wouldn't crawl on to the 'deep' side when beckoned by their mothers. This was interpreted as indicating that neonates have the innate ability to perceive depth. Those babies who did venture onto the deep side did so 'accidentally', either by backing on to it or resting

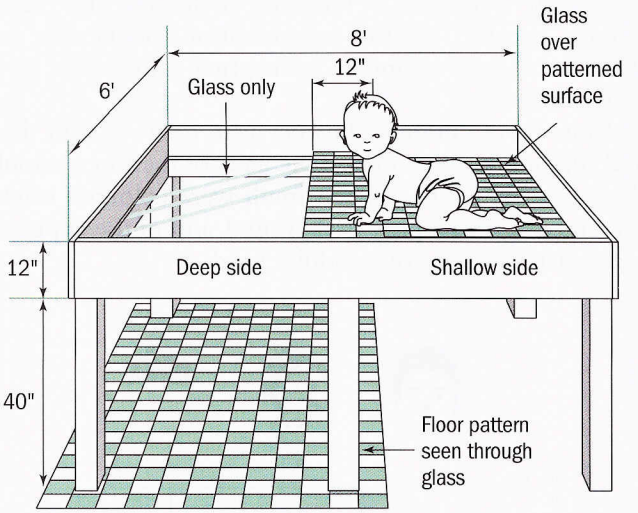


Figure 16.9 The visual cliff (from Dworetzky, 1981)

on it. It's likely that their poor motor control was responsible for this, rather than their inability to perceive depth.

ASK YOURSELF...

- Can you think of an alternative interpretation of Gibson and Walk's findings?

The visual cliff apparatus required the use of babies who could crawl, the youngest being six months old. By that age, the babies might have *learned* to perceive depth. Gibson and Walk subsequently tested a number of members of *precocial species* (capable of moving about independently at or shortly after birth), namely chicks, goat kids, lambs, and rats with their sensitive whiskers removed. None would venture on to the deep side. If forcibly placed on the deep side, they invariably 'froze'.

KEY STUDY 16.4 Using heart rate to measure depth perception (Campos *et al.*, 1970)

- In an ingenious way of assessing babies younger than six months, Campos *et al.* used heart rate as an index of depth perception.
- Babies of various ages had their heart rates monitored while they were on the visual cliff.
- Older babies (nine months) showed an *increased* heart rate, a response presumably indicating fear.
- The youngest (two months) showed a *decreased* heart rate when placed on the 'deep' side. They were *less* likely to cry, *more* attentive to what was underneath them, and clearly *not* frightened by what they saw. No such changes were observed when the infants were placed on the 'shallow' side.
- It seems that even two-month-old babies can perceive depth, and that avoidance behaviour is probably learnt (perhaps after having a few experiences of falling).

Depth perception has also been studied by looking at how neonates react when an object approaches their faces from a distance. For example, if a large box is moved towards a 20-day-old neonate's face, it shows an *integrated avoidance response*, throwing back its head, shielding its face with its hands, and even crying (Bower *et al.*, 1970). This suggests that the baby understands that the box is getting closer and, because it's potentially harmful, some sort of protective reaction is needed. Interestingly, this response occurs even with one eye closed, but not when equivalent pictures are shown on a screen. This indicates that *motion parallax* is the critical cue for distance (see Table 15.2, page 248).

The perception of 3-D objects

The integrated avoidance response suggests that as well as perceiving depth, neonates see boxes as solid, 3-D objects. To explore this, Bower (1979) devised a piece of apparatus that creates illusions of 3-D objects (see Figure 16.10). Babies aged 16 to 24 weeks were put in front of a screen. A plastic, translucent object was suspended between lights and the screen, casting a double shadow

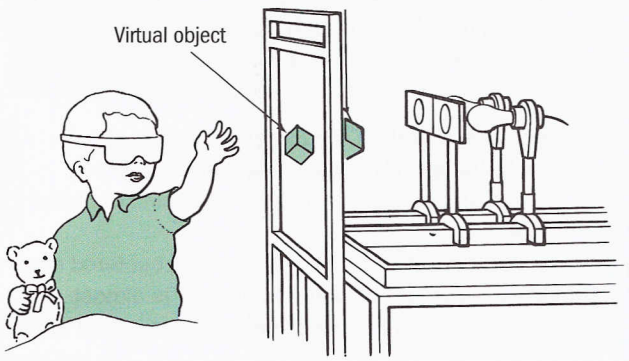


Figure 16.10 Trying to grasp a 'virtual object' produces surprise in a four- to six-month-old baby

on the back. When the screen is viewed from the front and the baby wears polarising goggles, the double shadows merge to form the image of a solid 3-D object.

Bower found that none of the babies showed any surprise when they grasped a real and solid object. But when they reached for the apparent object, and discovered there was nothing solid to get hold of, they all expressed surprise and some were even distressed. This indicates that they expected to be able to touch what they could 'see', an ability Bower believes to be innate.

Perceptual organisation: constancies and Gestalt principles

Size constancy

Despite a newborn's vision being much poorer than an adult's, its visual world is highly organised (Slater, 1994). According to *empiricists*, constancy is learned, and so neonates are likely to be 'tricked' by the appearance of things (for example, if something *looks* smaller – projects a smaller retinal image – then it *is* smaller). *Nativists*, however, would argue that neonates are innately able to judge the size of an object regardless of retinal image.

KEY STUDY 16.5 'Peek-a-boo' and size constancy too (Bower, 1966)

- To assess nativist and empiricist claims, Bower initially conditioned two-month-old babies to turn their heads whenever they saw a 30-centimetre cube at a distance of one metre (an adult popping up in front of the baby whenever it performed the desired behaviour served as a powerful reinforcer).
- Once the response was conditioned, the cube was replaced by one of three different cubes:
  - (a) a 30-centimetre cube at a distance of three metres (producing a retinal image *one-third* of the size of the original)
  - (b) a 90-centimetre cube at a distance of one metre (producing a retinal image *three times* the size of the original)
  - (c) a 90-centimetre cube at a distance of three metres (producing exactly the *same-sized* retinal image as the original).

(See Figure 16.11.)

Bower recorded the number of times each stimulus produced the conditioned response (CR), and used this as a measure of how similar the neonate considered the stimulus to be to the original. The original stimulus

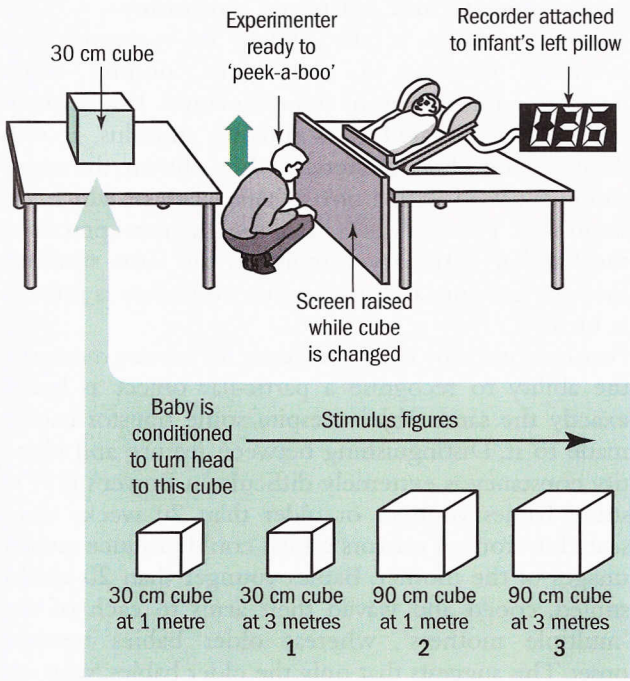


Figure 16.11 The experimental set-up in Bower's study of size constancy

produced a total of 98 CRs, while (a) produced 58, (b) 54 and (c) 22. The finding that most CRs occurred in response to (a) indicates that the baby was responding to the *actual size* of the cube, irrespective of its distance. This suggests the presence of size constancy, and supports the nativist view that this constancy is inbuilt.

The nativist position is further strengthened by the finding that fewest CRs occurred in response to (c). If size constancy was absent, as predicted by empiricists, neonates would 'compare' retinal images and base their perception of similarity on these regardless of distance. Empiricists, then, would have expected (c) to produce the most CRs. Bower's findings have been replicated with two-day-old babies by Slater *et al.* (1990). Although these findings demonstrate that size constancy is an organising feature of perception present at birth, learning still plays some part (Slater, 1994). For example, in the Slater *et al.* study, the procedure depends on infants learning the characteristics of the cubes in the early 'familiarisation trials'.

Shape constancy

According to Slater (1989), neonates can extract the constant real shape of an object that's rotated in the third dimension, that is, they're capable of recognising an object's form independently of (transformations in) its spatial orientation. For example, Bower (1966) found that if a two-month-old infant was conditioned to turn its head to look at a rectangle, it would continue to make the CR when the rectangle was turned slightly to produce a trapezoid retinal image.

Feature, identity and existence constancy

- *Feature constancy* is the ability to recognise the invariant features of a stimulus, despite some detectable but irrelevant transformation. If a neonate has been habituated to a moving stimulus, it will display a novelty preference when shown the same stimulus paired with a novel shape, both of which are stationary. This indicates that the neonate perceives the familiar stationary stimulus as the same stimulus that was moving, and that feature constancy is present at birth.
- Feature constancy is a prerequisite for *identity constancy:* the ability to recognise a particular object as being exactly the same object despite some transformation made to it. Distinguishing between feature and identity constancy is extremely difficult. In Bower's (1971) study, babies younger or older than 20 weeks were seated in front of mirrors which could produce several images of the mother. Babies younger than 20 weeks smiled, cooed and waved their arms to each of the 'multiple mothers', whereas older babies became upset. This suggests that only the older babies, who are aware that they have just one mother, possess identity constancy.
- *Existence constancy* refers to the belief that objects continue to exist even when they're no longer available to the senses (what Piaget calls object permanence: see Chapter 34). Together, existence and identity constancy comprise the *object concept*, which typically appears around six months of age.

Gestalt principles

Bower has also looked at how neonate perception is organised in terms of certain Gestalt principles (see Chapter 15). Bower wanted to discover if *closure* (or *occlusion*) is, as Gestalt psychologists claim, an inborn characteristic.

KEY STUDY 16.6 Closure (Bower, 1977)

- Two-month-old babies were conditioned to respond to a black wire triangle with a black iron bar across it (Figure 16.12, top).
- Then various stimuli (Figure 16.12, bottom) were presented.

ASK YOURSELF...

- If nativists are correct, and closure is an inborn ability, to which of A, B, C and D should the conditioned response generalise?

- Bower found that the CR was generalised to the complete triangle (A), suggesting that the babies perceived an unbroken triangle to lie behind the black iron bar.
- Given that they were unlikely to have encountered many triangles, Bower concluded that closure is almost certainly an inborn feature of neonate perceptual ability.

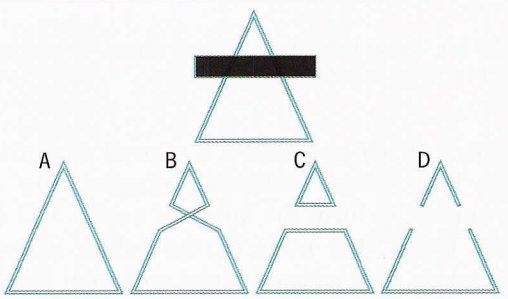


Figure 16.12 The stimulus figures used in Bower's study of closure

Bruce & Young (1998) sum up like this:

These studies of infants allow us to glimpse the intricate interplay between the innate organisation of the brain and its astonishing capacity for perceptual-learning ... the infant's brain is highly plastic – ready to be moulded by the experiences it encounters. But it also contains crafty mechanisms (such as attention-capturing properties for face-like stimuli) which keep

the odds high that these experiences will be optimal for what the baby will need to learn.

CROSS-CULTURAL STUDIES

ASK YOURSELF...

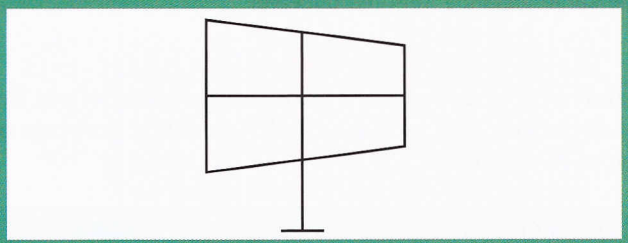
- We noted earlier that if we find consistent perceptual differences between different cultural groups, then we're likely to attribute them to environmental factors. In what ways do cultures differ that could suggest what these environmental factors might be?

Studies using visual illusions

There's a long history of cross-cultural research into perceptual development using visual illusions.

Box 16.3 Some early research into cross-cultural differences using visual illusions

- Rivers (1901) compared English adults and children with adult and child Murray Islanders (a group of islands between New Guinea and Australia) using the Müller–Lyer and the horizontal–vertical illusions. The Murray Islanders were less susceptible to the Müller–Lyer illusion than their English counterparts, but more susceptible to the horizontal–vertical illusion.
- Allport & Pettigrew (1957) used the rotating trapezoid illusion. This is a trapezoid with horizontal and vertical bars attached to it to give the impression of a window.



When attached to a motor and revolved in a circle, most western observers report seeing a rectangle oscillating backwards and forwards, rather than a trapezoid rotating through 360° (which it actually is). Allport and Pettigrew reasoned that for people unfamiliar with windows (at least as people from western cultures know them), the illusion wouldn't be perceived. When the trapezoid was viewed with both eyes and from a short distance, Zulus (who live in a rather 'circular environment') were less likely than either urban Zulus or Europeans to perceive an oscillating rectangle, and more likely to perceive a rotating trapezoid.

- Segall *et al.* (1963) used the Müller–Lyer illusion with members of African and Filipino cultures. Compared with white South Africans and Americans, the Africans and Filipinos were much less susceptible to the illusion. But on the horizontal–vertical illusion, members of two African cultures (the Batoro and the Bayankole) were most susceptible. People of these cultures live in high, open country where vertical objects are important focal points used to estimate distances. For example, when a tree or pole falls away from you, it seems to grow shorter (foreshortening), but when it falls to the left or right across your field of vision its length doesn't appear to change (Price & Crapo, 1999). The Bete, who live in a dense jungle environment, were least likely of all groups tested to see the illusion. The white South Africans and Americans fell between the extremes of the three African cultures.
- Stewart (1973) used the Ames distorted room (see Figure 15.17, page 259) with rural and urban Tongan children. The rural children were less likely to see the illusion than those living in urban environments and European children. This was also true for other illusions, including the Müller–Lyer.

The carpentered world hypothesis

According to Segall *et al.*'s (1963) *carpentered world hypothesis* (CWH), people in western cultures:

> ... live in a culture in which straight lines abound and in which perhaps 90 per cent of the acute and obtuse angles formed on [the] retina by the straight lines of [the] visual field are realistically interpretable as right angles extended in space.

Segall *et al.*, therefore, believe that we tend to interpret illusions, which are 2-D drawings, in terms of our past experiences. In the 'carpentered world' of western societies, we add a third dimension (depth), which isn't actually present in the drawing, and this leads to the illusion experience (cf. Gregory's account of visual illusions: see Chapter 15, pages 254–256).

Jahoda (1966) compared the Lobi and Dagomba tribes of Ghana, who live in open parkland in round huts, with the Ashanti, who live in dense forest in roughly rectangular huts. The prediction that the Lobi and Dagomba would be significantly more susceptible to the horizontal–vertical illusion, while the Ashanti would be significantly more susceptible to the Müller–Lyer, wasn't supported. Similarly, Gregor & McPherson (1965) found no significant differences between two groups of Australian aborigines on the two illusions, despite one group living in a relatively urbanised, carpentered environment and the other living primitively out of doors. However, both groups were significantly less prone to the Müller–Lyer than Europeans and more prone to the horizontal–vertical.

Despite some inconsistent evidence regarding illusion susceptibility and its interpretation, Segall *et al.* (1999) conclude their review by stating:

> ... people perceive in ways that are shaped by the inferences they have learned to make in order to function most effectively in the particular ecological settings in which they live ...

we learn to perceive in the ways that we need to perceive. In that sense, environment and culture shape our perceptual habits.

Studies of other perceptual phenomena

In various African cultures, children and adults find it difficult to perceive depth in both pictorial material and under certain conditions, in the real world too.

CASE STUDY 16.3: Confusing your buffalo with your insects (Turnbull, 1961)

- The BaMbuti pygmies live in the dense rainforests of the Congo, a closed-in world without open spaces.
- When a BaMbuti archer was taken to a vast plain and shown a herd of buffalo grazing in the distance, he claimed he'd never seen such insects before. When informed that the 'insects' were buffalo, the archer was offended.
- They then rode in a jeep towards the buffalo. The sight of the buffalo in the distance was so far removed from the archer's experience that he was convinced Turnbull was using magic to deceive him. The archer lacked experience with distance cues, preventing him from relating distance to size (Price & Crapo, 1999).

'Reading' pictures

Hudson (1960) showed people from various African cultures a series of pictures depicting hunting scenes (see Figure 16.13). Participants were first asked to name all the objects in the scene, then they were asked about the relationship between them, such as 'Which is closer to the man?' If the 'correct' interpretation was made, and depth cues were taken into account, respondents were classified as having 3-D vision. If such cues were ignored, they were classified as having 2-D vision. Hudson reported that both children and adults found it difficult to perceive depth in the pictorial material.

Deregowski (1972) refers to a description given of an African woman slowly discovering that a picture she was looking at portrayed a human head in profile:

> She discovered in turn the nose, the mouth, the eye, but where was the other eye? I tried turning my profile to explain why she could see only one eye, but she hopped round to my other side to point out that I possessed a second eye which the other lacked.

The woman treated the picture as an object, rather than a 2-D representation of an object, that is, she didn't 'infer' depth in the picture. What she believed to be an 'object' turned out to have only two dimensions, and this is what the woman found bewildering. But when familiar pictorial stimulus material is used, recognition tends to be better (Serpell, 1976). Thus, some (but not all) of the Me'en of Ethiopia found it much easier to recognise material when it was presented in the form of pictures painted on cloth (which is both familiar to them and free of distracting cues such as a border) than line drawings on paper (Deregowski, 1972).

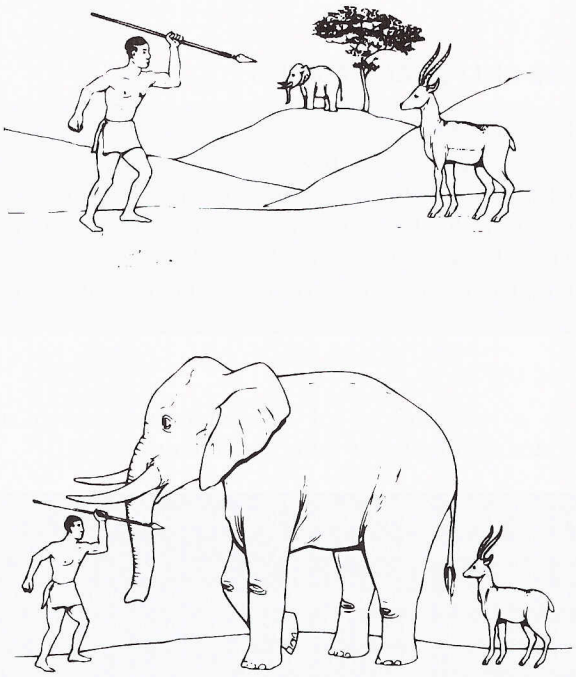


Figure 16.13 Hudson (1960) found that when shown the top picture and asked which animal the hunter is trying to spear, members of some cultures reply 'the elephant'. This shows that some cultures don't use cues to depth (such as overlap and known size of objects). The second picture shows the hunter, elephant and antelope in true size ratios when all are the same distance from the observer

ASK YOURSELF...

- In Hudson's pictures (Figure 16.13), which depth cues are used (see Table 15.2, page 248)?
- Which cues *aren't* used, that you think could be important to people living in open terrain?

Are Hudson's pictures biased?

Hudson's pictures use *relative size* and *overlap/superimposition*, but *texture gradient*, *binocular disparity* and *motion parallax* are all missing. When the pictures were redrawn to show texture gradients (by, for example, adding grass to open terrain), more Zambian children gave 3-D answers than in Hudson's original study (Kingsley *et al.*, cited in Serpell, 1976). Research summarised by Berry *et al.* (1992) indicates that the absence of certain depth cues in pictorial material makes the perception of depth difficult for non-western peoples (see Gross, 2003a).

CONCLUSIONS: NATURE, NURTURE OR AN INTERACTION?

According to Bee (2000), as researchers have become increasingly ingenious in devising ways of testing infants' perceptual skills, they've found more and more skills already present in neonates and very young infants. There's growing evidence to support Kagan's (1971) claim that:

> Nature has apparently equipped the newborn with an initial bias in the processing of experience. He does not ... have to learn what he should examine.

Slater (1994) is a little more cautious. Auditory perception and learning about the auditory world (not dealt with in this chapter) are well advanced even in very young babies, and a nativist view is closest to the truth. But in the case of vision, the truth lies somewhere in-between a nativist and empiricist view. Evidence suggests that the newborn infant:

> ... comes into the world with a remarkable range of visual abilities ... Some rudimentary knowledge and understanding of important stimuli such as objects and faces is present at birth, and experience builds on this genetically or evolutionarily provided range of abilities. (Slater, 1994)

Some of the strongest evidence in support of the role of nurture comes from cross-cultural studies, deprivation studies using non-humans, and studies of human cataract patients. However, nature and nurture are never entirely separable. For example, the neonate's ability to discriminate between the mother's face and that of a similar-looking female must be the result of experience, but the capacity to make the distinction must be built in. As Bee (2000) says, whenever there's a dispute between nativists and empiricists:

> Both sides are correct. Both nature and nurture are involved.

CHAPTER SUMMARY

- **Nativists** argue that we're born able to perceive the world in particular ways, with little or no learning necessary. **Empiricists** believe that our perceptual abilities develop through learning and experience. Most psychologists reject these extreme viewpoints in favour of an **interactionist** position.
- Studying **neonates** represents the most **direct** source of evidence, but we can only **infer** what their perceptual experience is.
- **Non-human animal experiments** usually involve **deprivation** of normal sensory experience, raising serious **ethical questions**. There's also the problem of generalising the results of such studies to humans.
- Studies of **human cataract patients** represent the human counterpart to non-human animal experiments. Problems in interpretation of the research findings include possible physical deterioration of the visual system and dubious reliability of the case histories.
- Studies of **perceptual adaptation/readjustment** demonstrate the **flexibility** of human perception, but caution is needed in deciding whether **perceptual** or **motor adaptation** is involved.
- **Cross-cultural studies** help to identify the influences on perceptual development, in particular the role of **learning** and **experience**. But psychologists disagree as to the key features of cultural learning.
- When analysing data from cataract patients, Hebb distinguished between **figural unity**, which he believed is largely innate, and **figural identity** which is largely learnt.
- Deprivation experiments suggest that light is necessary for normal physical development of the visual system, and that **patterned light** is necessary for the normal development of more complex abilities in chimps, cats and monkeys.
- Perceptual adaptation/readjustment studies illustrate the enormous adaptability of the human visual system, but this seems to involve learning appropriate **motor behaviour**.
- Methods used to study **neonate perception** include **spontaneous visual preference/preferential looking, sucking rate, habituation, conditioned head rotation, physiological measures** and **measures of electrical brain activity**.
- Babies show a preference for **complexity**, which is a function of age. This is probably related to improvement in the ability to scan the whole pattern, rather than just areas of greatest contrast.
- One aspect of **form perception** that has been extensively investigated is 'facedness'. Evidence that babies quickly learn to prefer their mothers' faces (and voices) is contributing to the view that the human face has **species-specific** significance from birth onwards.
- **Depth perception** has been studied using the **visual cliff apparatus**. Heart rate measures support Gibson and Walk's original claim (based on crawling) that depth perception is probably innate.
- Bower believes that babies have an inborn understanding of the solidity of 3-D objects, as well as **size** and **shape constancy** and the Gestalt principle of **closure**.
- Cross-cultural studies involve giving members of different cultural groups the same test materials, usually **visual illusions**, including the Müller–Lyer, horizontal–vertical, and the rotating trapezoid.
- Segall *et al.* proposed the **carpentered world hypothesis** (CWH) to explain why different cultural groups are more/less susceptible to different illusions. This stresses the role of the **physical environment** on perception.
- Evidence that contradicts the carpentered world hypothesis has led to the proposal that exposure to western **cultural variables** may be more important, such as 2-D drawings and photographs.

- The generally accepted conclusion is that some perceptual abilities are present at birth, while others develop later. Perceptual development after birth involves a complex interaction between genetic/maturational and environmental/experiential influences.

Links with other topics/chapters

- The continuing debate within psychology about the *relative influence of nature and nurture* (Chapter 50) partly reflects its *philosophical roots* (Chapters 1 and 3).
- Vision consists of a large number of abilities, some more simple, others more complex (Chapter 15), and it's likely that the relative contributions of genetic and environmental factors vary between different abilities.
- The experimental study of non-human animals, especially those involving deprivation or any kind of pain or suffering, raise fundamental *ethical issues* (Chapter 48).
- *Cross-cultural psychology* helps to question the universality of the theories and research findings reported using western-only populations. But it's still mainly western psychologists that conduct this cross-cultural research, using methods and instruments designed in the West (Chapter 47).
- Cross-cultural studies have made considerable use of *visual illusions* (Chapter 15).
- An inborn attraction to human faces makes the baby interested in its caregivers, which, in turn, encourages them to provide the care the baby needs. The very rapid learning to recognise the mother could be seen as *evolutionarily determined attachment behaviour* (Chapters 2 and 32).

The meanings of 'memory'
Storage
- Sensory memory
- Short-term memory (STM)
  - *Capacity*
  - *Duration*
  - *Coding*
  - *Other forms of coding in STM*
- Long-term memory (LTM)
  - *Capacity and duration*
  - *Coding*

Retrieval
- How is memory measured?

The multi-store model (MSM)
- Evidence for the MSM
  - *Experimental studies of STM and LTM*
  - *Studies of coding*
  - *The study of brain-damaged patients*

Alternatives to the MSM
- Multiple forms of LTM
  - *Episodic and semantic memory*
  - *Autobiographical vs experimental EM*
  - *Procedural vs declarative memory*
- The working-memory (WM) model: rethinking STM
  - *The central executive*
  - *The articulatory (or phonological) loop*
  - *The visuospatial scratch, or sketch, pad*
  - *An evaluation of the WM model*
- The levels of processing (LOP) model
  - *Rehearsal and the MSM*
  - *Evaluation of the LOP model*

Memory and the representation of knowledge
- The organised nature of memory
  - *Imagery as a form of organisation*
- Knowledge and semantic memory
  - *The hierarchical network model*
  - *The spreading-activation model*
- Schema theory and everyday memory

Theories of forgetting
- Decay theory
  - *Decay in STM and LTM*
  - *Is forgetting just a matter of time?*
- Displacement theory
- Retrieval-failure theory and cue-dependent forgetting
- Interference theory
  - *Limitations of laboratory studies of interference theory*

Conclusions
Chapter summary
Links with other topics/chapters

17

MEMORY AND FORGETTING



INTRODUCTION AND OVERVIEW

As we noted in Chapter 11, learning and memory represent two sides of the same coin: learning depends on memory for its 'permanence', and memory would have no 'content' without learning. Hence, we could define memory as the retention of learning and experience. As Blakemore (1988) says:

> In the broadest sense, learning is the acquisition of knowledge and memory is the storage of an internal representation of that knowledge ...

Blakemore expresses the fundamental importance of memory like this:

> ... without the capacity to remember and to learn, it is difficult to imagine what life would be like, whether it could be called living at all. Without memory, we would be servants of the moment, with nothing but our innate reflexes to help us deal with the world. There could be no language, no art, no science, no culture. Civilisation itself is the distillation of human memory ...

Both learning and memory featured prominently in the early years of psychology as a science (see Chapters 1, 3 and 11). William James, one of the pioneers of psychology, was arguably the first to make a formal distinction between *primary* and *secondary memory*, which correspond to *short-term* and *long-term memory* respectively. This distinction is central to Atkinson and Shiffrin's (1968, 1971) very influential *multi-store model*.

As with other cognitive processes, memory remained a largely unacceptable area for psychological research until the cognitive revolution of the mid-1950s, reflecting the dominance of behaviourism up until this time. However, some behaviourists, especially in the USA, studied 'verbal behaviour' using paired-associate learning. This associationist approach was (and remains) most apparent in *interference theory*, an attempt to explain forgetting. Other theories of forgetting include *trace decay*, *displacement*, *cue-dependent forgetting* and *repression*.

Several major accounts of memory have emerged from criticisms of the limitations of the multi-store model. These include Craik and Lockhart's *levels-of-processing approach*, Baddeley and Hitch's *working-memory model*, and attempts to identify different types of long-term memory (e.g. Tulving, 1972). Psychologists are increasingly interested in *everyday memory*, rather than studying it merely as a laboratory phenomenon.

THE MEANINGS OF 'MEMORY'

Memory, like learning, is a hypothetical construct denoting three distinguishable but interrelated processes:

- *registration* (or *encoding*) – the *transformation* of sensory input (such as a sound or visual image) into a form which allows it to be entered into (or registered in) memory. With a computer, for example, information can only be encoded if it's presented in a format the computer recognises
- *storage* – the operation of *holding* or *retaining* information in memory. Computers store information by means of changes in the system's electrical circuitry; with people, the changes occurring in the brain allow information to be stored, though exactly what these changes involve is unclear
- *retrieval* – the process by which stored information is *extracted* from memory.

Registration can be thought of as a necessary condition for storage to take place, but not everything which registers on the senses is stored. Similarly, storage is a necessary, but not sufficient, condition for retrieval: we cannot recover information which hasn't been stored, but the fact that we know it is no guarantee that we'll remember it on any particular occasion. This is the crucial distinction between *availability* (whether or not the information has been stored) and *accessibility* (whether or not it can be retrieved), which is especially relevant to theories of forgetting (see pages 299–304).

STORAGE

ASK YOURSELF...

- Can saying 'I can't remember' mean different things?
- Do you consider yourself to have a 'good'/'poor' memory? What criteria do you apply in making that assessment?

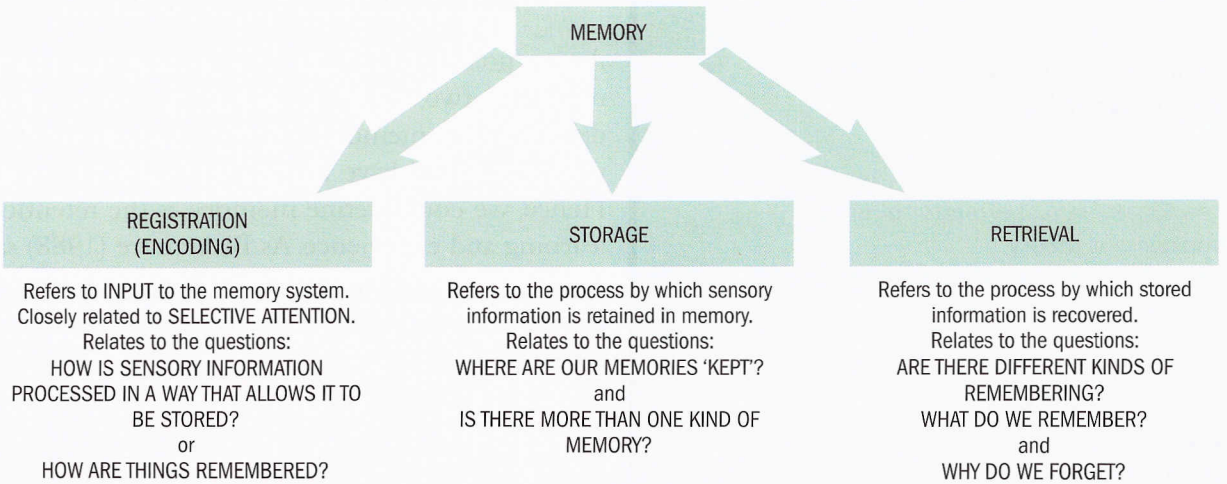


Figure 17.1 The three processes of memory

In practice, storage is studied through testing people's ability to retrieve. This is equivalent to the distinction between learning and performance: learning corresponds to storage, while performance corresponds to retrieval (see Chapter 11). But there are several kinds of retrieval (see below). So, if we're tested by recall it may look as though we haven't learnt something, but a test of recognition may show that we have. For these reasons, it's useful to distinguish between *memory as storage* and *memory as retrieval*. When people complain about having a 'poor memory', they might mean storage or retrieval, but they're unlikely to make the distinction (they'd simply say 'I can't remember').

As we noted earlier, it was James who first distinguished between primary and secondary memory. Ebbinghaus (1885), the pioneer of memory research, would have accepted it. Many psychologists since James have also made the distinction, including Hebb (1949), Broadbent (1958), and Waugh & Norman (1965). In Atkinson & Shiffrin's (1968, 1971) multi-store model, they're called short-term memory (STM) and long-term memory (LTM) respectively. Strictly, STM and LTM refer to experimental procedures for investigating short-term and long-term storage respectively.

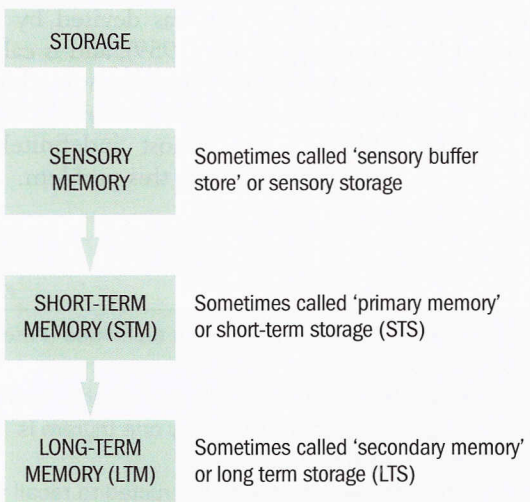


Figure 17.2 The three forms of storage

Sensory memory

Sensory memory gives us an accurate account of the environment as experienced by the sensory system. We retain a 'literal copy' of the stimulus long enough for us to decide whether it's worthy of further processing. Any information we don't attend to or process further is forgotten. It's probably more useful to think of sensory memory as an aspect of perception and as a necessary requirement for storage proper (that is, STM).

The storage (such as it is) occurs within the sensory system that receives the information (it's *modality-specific*). Additional information entering the same sensory channel immediately disrupts the storage. For example, if two visual stimuli are presented within quick succession, memory of the first stimulus may be lost. But if the second stimulus is a sound or smell, it won't interfere with memory of the visual stimulus. Although it's likely that a sensory memory exists for each of our sensory systems (see Chapter 5), most research has concentrated on:

- *iconic memory* (an icon is an image) stores visual images for about half a second
- *echoic memory* stores sounds for up to two seconds.

We're usually unaware of sensory memory, but if you watch someone wave a lighted cigarette in a darkened room, you'll see a streak rather than a series of points (Woodworth, 1938). If we had no iconic memory, we'd perceive a film as a series of still images interspersed with blank intervals, rather than as a continuously moving scene. Without echoic memory, instead of hearing speech as such we'd hear a series of unrelated sounds (Baddeley, 1995).

ASK YOURSELF...

- Can you relate these examples to any of the Gestalt laws of perception discussed in Chapter 15?

KEY STUDY 17.1 Iconic memory (Sperling, 1960, 1963)

Sperling used a tachistoscope to flash visual displays for very brief intervals (50 milliseconds or 1/20 of a second). The display comprised three rows of four letters in a 4 × 3 matrix.

- In the **whole report condition** (or span of apprehension), participants were asked to recall as many as possible from the whole matrix. On average, they recalled 4.32 letters (out of 12), although they commonly reported having seen more than they could actually remember.
- In the **partial report condition**, participants were required to recall the top, middle or bottom row, depending on whether they heard a high-, medium- or low-pitched tone following the presentation. Although they couldn't know in advance which tone would be heard, they succeeded in recalling an average of 3.04 of the letters from each row. This meant that between nine and ten words were available immediately after presentation.

In the first condition, approximately five words must have been lost during the time it took to recall the whole array. This was supported by the finding that the advantage of partial reports was lost if the tone was delayed for a second or so.

Similar effects have been reported for the echoic store by Broadbent (1958) and Treisman (1964). Broadbent's filter

model of selective attention was in many ways the main precursor of the multi-store approach to memory, and there's a definite resemblance between sensory memory (or storage) and Broadbent's sensory 'buffer' store (Eysenck & Keane, 1990: see Chapter 13).

Short-term memory (STM)

Probably less than one-hundredth of all the sensory information that impinges on the human senses every second reaches consciousness. Of this, only about 5 per cent is stored permanently (Lloyd *et al.*, 1984). Clearly, if we possessed only sensory memory, our capacity for retaining information about the world would be extremely limited. However, according to models of memory such as Atkinson and Shiffrin's multi-store model (1968, 1971), some information from sensory memory is successfully passed on to STM.

STM (and LTM) can be analysed in terms of:

- *capacity* – how much information can be stored
- *duration* – how long the information can be held in storage
- *coding* – how sensory input is represented by the memory system.

Capacity

Ebbinghaus (1885) and Wundt (in the 1860s) were two of the first psychologists to maintain that STM is limited to six or seven bits of information. But the most famous account is given by Miller (1956) in his article 'The magical number seven, plus or minus two'. Miller showed how *chunking* can be used to expand the limited capacity of STM by using already established memory stores to categorise or encode new information.

If we think of STM's capacity as seven 'slots', with each slot being able to accommodate one bit or unit of information, then seven individual letters would each fill a slot and there'd be no 'room' left for any additional letters. But if the letters are chunked into a word, then the word would constitute one unit of information, leaving six free slots. In the example below, the 25 bits of information can be chunked into (or reduced to) six words, which could quite easily be reduced further to one 'bit' (or chunk) based on prior familiarity with the words:

S	A	V	A	O
R	E	E	E	G
U	R	S	Y	A
O	O	D	N	S
F	C	N	E	R

To be able to chunk, you have to know the 'rule' or the 'code', which in this case is: starting with F (bottom left-hand corner) read upwards until you get to S and then drop down to C and read upwards until you get to A, then go to N and read upwards and so on. This should give you 'four score and seven years ago'.

Chunking is involved whenever we reduce a larger amount of information to a smaller amount. This (a) increases the capacity of STM, and (b) represents a form of encoding information, by imposing a meaning on otherwise meaningless material. For example:

- arranging letters into words, words into phrases, phrases into sentences
- converting 1066 (four bits of information) into a date (one chunk), so a string of 28 numbers could be reduced to seven dates
- using a rule to organise information: the series 149162536496481100121 (21 bits) is generated by the rule by which $1^1 = 1$, $2^2 = 4$, $3^3 = 9$, and so on. The rule represents a single chunk, and that's all that has to be remembered.

These examples demonstrate how chunking allows us to bypass the seven-bit 'bottleneck'. Although the amount of information contained in any one chunk may be unlimited (e.g. the rule above can generate an infinitely long set of digits), the number of chunks which can be held in STM is still limited to seven plus or minus two.

Duration

A way of studying 'pure' STM was devised by Brown (1958) and Peterson & Peterson (1959), and is called the Brown–Peterson technique. By repeating something that has to be remembered (maintenance rehearsal), information can be held in STM almost indefinitely. The *Brown–Peterson technique* overcomes this problem.

KEY STUDY 17.2 The Brown–Peterson technique (Peterson & Peterson, 1959)

- In the Brown–Peterson technique, participants hear various trigrams (such as XPJ). Only one trigram is presented on each trial.
- Immediately afterwards, they're instructed to recall what they heard or to count backwards, in threes, out loud, from some specified number for 3, 6, 9, 12, 15 or 18 seconds (the retention interval). The function of this distractor task is to prevent rehearsal.
- At the end of the time period, participants try to recall the trigram.
- Peterson and Peterson found that the average percentage of correctly recalled trigrams was high with short delays, but decreased as the delay interval increased. Nearly 70 per cent was forgotten after only a nine-second delay, and 90 per cent after 18 seconds.
- In the absence of rehearsal, then, STM's duration is very short, even with very small amounts of information. If a more difficult distractor task is used, it can be made even shorter.

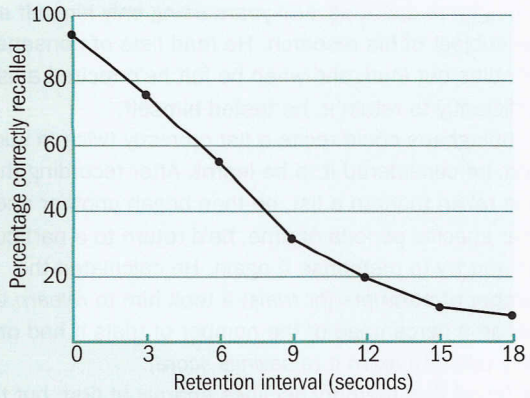


Figure 17.3 The data reported by Peterson and Peterson in their experiment on the duration of STM

Coding

Conrad (1964) presented participants visually with a list of six consonants (such as BKSJLR), each of which was seen for about three-quarters of a second. They were then instructed to write down the consonants. Mistakes tended to be related to a letter's *sound*. For example, there were 62 instances of B being mistaken for P, 83 instances of V being mistaken for P, but only two instances of S being mistaken for P. These *acoustic confusion errors* suggested to Conrad that STM must code information according to its sound. Even when information is presented *visually*, it must somehow be *transformed* into its acoustic code (see also Baddeley's, 1966, study below).

Other forms of coding in STM

Shulman (1970) showed participants lists of ten words. Recognition of the words was then tested using a visually presented 'probe word', which was either:

- a *homonym* of one of the words on the list (such as 'bawl' for 'ball')
- a *synonym* (such as 'talk' for 'speak'), or
- identical to it.

ASK YOURSELF...

- Shulman found that homonym and synonym probes produced similar error rates.
- What does this tell us about the types of coding used in STM?

Shulman's results imply that some *semantic coding* (coding for *meaning*) had taken place in STM. If an error was made on a synonym probe, some matching for meaning must have taken place.

Visual images (such as abstract pictures, which would be difficult to store using an acoustic code) can also be maintained in STM, if only briefly.

Long-term memory (LTM)

Capacity and duration

It's generally accepted that LTM has unlimited capacity. It can be thought of as a vast storehouse of all the information, skills, abilities and so on, which aren't being currently used, but which are potentially retrievable. According to Bower (1975), some of the kinds of information contained in LTM include:

- a spatial model of the world around us
- knowledge of the physical world, physical laws and properties of objects
- beliefs about people, ourselves, social norms, values and goals
- motor skills, problem-solving skills, and plans for achieving various things
- perceptual skills in understanding language, interpreting music, and so on.

Many of these are included in what Tulving (1972) calls *semantic memory* (see below).

Information can be held for between a few minutes and several years (and may in fact span the individual's entire lifetime).

Coding

With verbal material, coding in LTM appears to be mainly *semantic*. For example, Baddeley (1966) presented participants with words which were either:

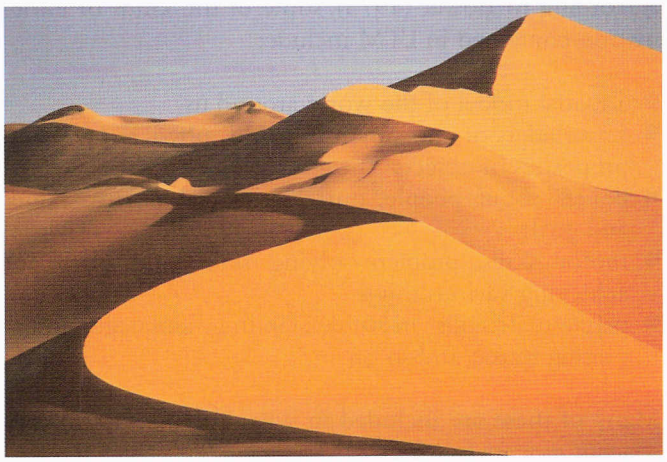
- *acoustically similar* (e.g. 'caught', 'short', 'taut', 'nought')
- *semantically similar* (e.g. 'huge', 'great', 'big', 'wide')
- *acoustically dissimilar* (e.g. 'foul', 'old' and 'deep'), or
- *semantically dissimilar* (e.g. 'pen', 'day', 'ring').

When recall from STM was tested, acoustically similar words were recalled less well than acoustically dissimilar words. This supports the claim that acoustic coding occurs in STM. There was a small difference between the number of semantically similar and semantically dissimilar words recalled (64 and 71 per cent respectively). This suggests that while some semantic coding occurs in STM, it's not dominant. When an equivalent study was conducted on LTM, fewer semantically similar words were recalled, while acoustically similar words had no effect on LTM recall. This suggests that LTM's *dominant* code is semantic. Similarly, Baddeley found that immediate recall of the order of short lists of unrelated words was seriously impeded if the words were acoustically similar, but not if they were semantically similar. After a delay, however, exactly the opposite effect occurred.

Does LTM use only semantic coding?

Findings such as Baddeley's don't imply that LTM uses only a semantic code (Baddeley, 1976). Our ability to picture a place we visited on holiday indicates that at least

some information is stored or coded visually. Also, some types of information in LTM (such as songs) are coded acoustically. Smells and tastes are also stored in LTM, suggesting that it's a very flexible system, as well as being large and long-lasting.



Long-term memory of this scene requires the use of a visual code

Table 17.1 Summary of main differences between STM and LTM

	Capacity	Duration	Coding
STM	Seven bits of (unrelated) information. Can be increased through chunking	15–30 seconds (unaided). Can be increased by (maintenance) rehearsal	Mainly acoustic. Some semantic. Visual is also possible
LTM	Unlimited	From a few seconds to several years (perhaps permanently)	Semantic, visual, acoustic, and also olfactory (smells) and gustatory (tastes). Very flexible

RETRIEVAL

There are many different ways of recovering or locating information which has been stored; that is, 'remembering' can take many different forms. Likewise, there are also different ways of measuring memory in the laboratory.

How is memory measured?

The systematic scientific investigation of memory began with Ebbinghaus (1885).

KEY STUDY 17.3 Pure memory (Ebbinghaus, 1885)

- To study memory in its 'purest' form, Ebbinghaus invented three-letter nonsense syllables (a consonant followed by a vowel followed by another consonant, such as XUT and JEQ).
- Ebbinghaus spent several years using only himself as the subject of his research. He read lists of nonsense syllables out loud, and when he felt he'd recited a list sufficiently to retain it, he tested himself.
- If Ebbinghaus could recite a list correctly twice in succession, he considered it to be learnt. After recording the time taken to learn a list, he then began another one.
- After specific periods of time, he'd return to a particular list and try to memorise it again. He calculated the number of attempts (or *trials*) it took him to *relearn* the list, as a percentage of the number of trials it had originally taken to learn it (a *savings score*).
- He found that memory declines sharply at first, but then levels off. For example, in one set of experiments involving a series of eight different lists of 13 nonsense syllables, he found savings scores of:
  - 58 per cent, 20 minutes after training
  - 44 per cent, 60 minutes after training
  - 34 per cent, 24 hours after training
  - 21 per cent, 31 days after training.

  ... Thus, most of the memory loss occurred within the first minutes after training; once the memory had survived this hurdle it seemed much more stable ... (Rose, 2003)

  This finding has subsequently been replicated many times.

Other techniques for measuring memory include the following:

- *Recognition*: This involves deciding whether or not a particular piece of information has been encountered before (as in a multiple-choice test, where the correct answer is presented along with incorrect ones). The *sensitivity* of recognition as a form of retrieval is demonstrated by Standing (1973).

KEY STUDY 17.4 Recognising how to ask people to remember (Standing, 1973)

- Participants were shown series of either pictures or words (20 or so per series), each slide for five seconds, and each series at three-minute intervals.
- Two days later they were shown further series of slides using a double projector. Thus they saw two pictures side by side, one taken from the original series, the other being new. They had to indicate which looked more familiar.
- Amazingly, as Standing went on increasing the number of images up to 10,000, the error rate continued to stay very low, and didn't seem to increase at all with the number of items to be remembered.
- Standing concluded that, for all practical purposes, there's no upper limit to memory capacity.
- Contrary to the evidence that there are limits to what's transferred from STM to LTM (see text below), it seems that some accessible trace of each item must have been

left – enough to enable a new item to be compared with the trace and classified as familiar or unfamiliar. According to Rose (2003):

... On this basis, it could be argued that nothing is forgotten, provided we know how to ask if it is remembered ...

- *Recall*: This involves participants actively searching their memory stores in order to retrieve particular information (as in timed essays). Retrieval cues are missing or very sparse. The material can be recalled either in the order in which it was presented (*serial recall*) or in any order at all (*free recall*).
- *Memory-span procedure*: This is a version of serial recall, in which a person is given a list of unrelated digits or letters, and then required to repeat them back immediately in the order in which they were heard. The number of items on the list is successively increased until an error is made. The maximum number of items that can consistently be recalled correctly is a measure of *immediate memory span*.
- *Paired-associates recall*: Participants are required to learn a list of paired items (such as 'chair' and 'elephant'). When one of the words (e.g. 'chair') is re-presented, the participant must recall the paired word ('elephant').

THE MULTI-STORE MODEL (MSM)

Atkinson & Shiffrin's (1968, 1971) *multi-store model* (MSM) (sometimes called the *dual-memory model* because of the emphasis on STM and LTM) was an attempt to explain how information flows from one storage system to another. The model sees sensory memory, STM and LTM as *permanent structural components* of the memory system (built-in features of the human information-processing system). In addition to these structural components, the memory system comprises more *transient control processes*. *Rehearsal* is a key control process, serving two main functions:

1. to act as a *buffer* between sensory memory and LTM by maintaining incoming information within STM
2. to transfer information to LTM.

Information from sensory memory is scanned and matched with information in LTM, and if a match (i.e. pattern recognition) occurs, then it might be fed into STM along with a verbal label from LTM.

Evidence for the MSM

Three kinds of evidence are relevant here:

1. experimental studies of STM and LTM (sometimes referred to as two-component tasks)
2. studies of coding
3. studies of brain-damaged patients.

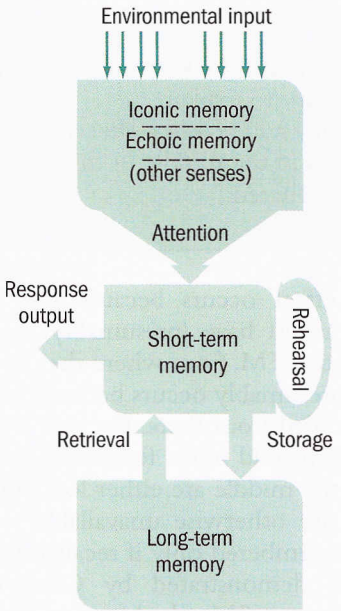


Figure 17.4 The multi-store/dual-memory model of memory proposed by Atkinson and Shiffrin

Experimental studies of STM and LTM

The serial position effect

Murdock (1962) presented participants with a list of words at a rate of about one per second. They were required to free-recall as many of these as they could. Murdock found that the probability of recalling any word depended on its position in the list (its *serial position*: hence the graph shown in Figure 17.5 is a *serial position curve*). Participants typically recalled those items from the end of the list first, and got more of these correct than earlier items (the *recency effect*). Items from the beginning of the list were recalled quite well relative to those in the middle (the *primacy effect*), but not as well as those at the end. Poorest recall is for items in the middle. The serial position effect holds regardless of the length of the list (Murdock, 1962).

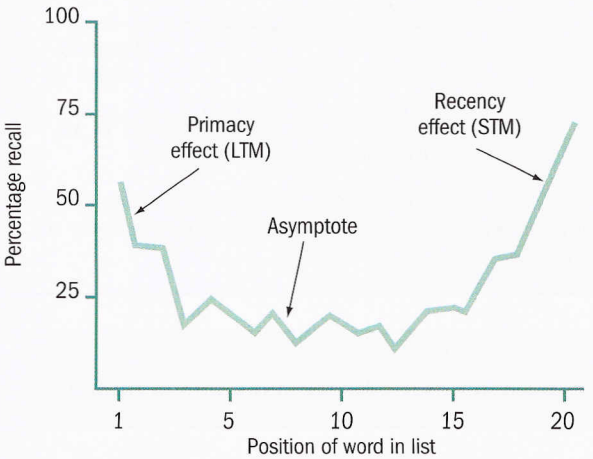


Figure 17.5 A typical serial position curve (Reprinted from *Journal of Verbal Learning & Verbal Behaviour, 5*, Glanzer & Cunitz, 1966, Two storage mechanisms in free recall, 928–935, © 1966, with permission from Elsevier.)

ASK YOURSELF...

- Using what you already know about STM, LTM and rehearsal, try to explain:
  (a) the primacy and recency effects
  (b) why words in the middle of the list are the least well remembered.

The primacy effect occurs because the items at the beginning of the list have (presumably) been rehearsed and transferred to LTM, from where they're recalled. The recency effect presumably occurs because items currently in STM are recalled from there. Because STM's capacity is limited and can hold items for only a brief period of time, words in the middle are either lost from the system completely, or are otherwise unavailable for recall. The last items are remembered only if recalled first and tested immediately, as demonstrated by Glanzer & Cunitz (1966) in a variation of Murdock's study.

KEY STUDY 17.5 Removing the recency effect (Glanzer & Cunitz, 1966)

- Glanzer and Cunitz presented two groups of participants with the same list of words.
- One group recalled the material immediately after presentation, while the other group recalled after 30 seconds. They had to count backwards in threes (the Brown–Peterson technique), which prevented rehearsal and caused the recency effect to disappear.
- The primacy effect was largely unaffected.

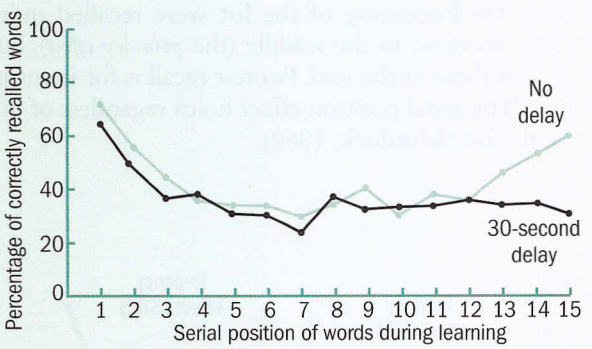


Figure 17.6 Data from Glanzer and Cunitz's study showing serial position curves after no delay and after a delay of 30 seconds

ASK YOURSELF...

- Try to account for Glanzer and Cunitz's findings.

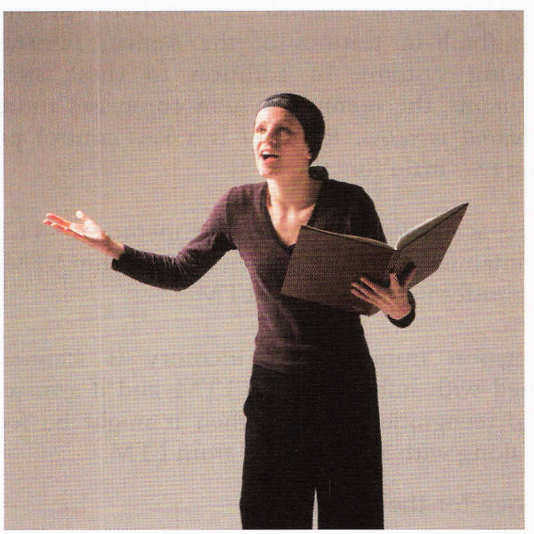
It's likely that the earlier words had been transferred to LTM (from where they were recalled), while the most recent words were 'vulnerable' to the counting task (Eysenck, 1993).

Brown–Peterson technique and rehearsal

When discussing the characteristics of STM earlier (see page 284), we noted the rapid loss of information from memory when rehearsal is prevented using the Brown–Peterson technique. This is usually taken as evidence for the existence of a STM with rapid forgetting (see below, page 299). But the concept of rehearsal itself has been criticised as both unnecessary and too general.

KEY STUDY 17.6 Maintenance vs elaborative rehearsal (Craik & Watkins, 1973)

- Craik and Watkins asked participants to remember only certain 'critical' words (those beginning with a particular letter) from lists presented either rapidly or slowly.
- The position of the critical words relative to the others determined the amount of time a particular word spent in STM, and the number of potential rehearsals it could receive.
- Craik and Watkins found that long-term remembering was unrelated to either how long a word had spent in STM, or the number of explicit or implicit rehearsals it received.
- Based on this and later findings, Craik and Watkins distinguished between:
  (a) **maintenance rehearsal**, where material is rehearsed in the form in which it was presented ('rote'), and
  (b) **elaborative rehearsal** (or **elaboration of encoding**), which elaborates the material in some way (such as by giving it a meaning, or linking it with pre-existing knowledge stored in LTM).



Elaborative rehearsal is much more like the rehearsal involved in a play than is maintenance rehearsal

An earlier study by Glanzer & Meinzer (1967) found that participants required to repeat items aloud recalled fewer

of them than those allowed an equal period of silent rehearsal. Perhaps in silent rehearsal the material isn't being merely repeated, but recoded into a different form which enhances recall.

It seems, then, that what's important is the *kind* of rehearsal or processing, rather than how much. This has been investigated in particular by Craik & Lockhart (1972), in the form of the levels-of-processing approach (see pages 294–296).

Studies of coding

Table 17.1 (page 286) indicates that the major form of coding used in STM is acoustic, while LTM is much more flexible and varied in how it encodes information. It also suggests that semantic coding is used primarily by LTM. This is usually taken to support the multi-store model. However, not everyone accepts this view.

Chunking, STM and LTM

When discussing the characteristics of STM (pages 284–285), we saw that chunking increases STM's capacity by imposing meaning on otherwise meaningless material. According to Miller (1956), chunking represents a *linguistic recoding* which seems to be the 'very lifeblood of the thought process'. But this cannot occur until certain information in LTM is activated, and a match made between the incoming items and their representation in LTM.

Miller & Selfridge (1950) gave participants 'sentences' of varying lengths, which resembled (or approximated to) true English to different degrees, and asked them to recall the words in their correct order. The closer a 'sentence' approximated normal English, the better it was recalled. This suggests that knowledge of semantic and grammatical structure (presumably stored in LTM) is used to aid recall from STM.

In a similar study, Bower & Springston (1970) presented one group of American college students with letters that formed familiar acronyms (e.g. fbi, phd, twa, ibm). A second group was presented with the same letters, but in a way that didn't form those acronyms (e.g. fb, iph, dtw, aib, m). The first group recalled many more letters than the second group. The pause after 'fbi', and so on, allowed the students to 'look up' the material in their mental dictionaries and so encode the letters in one chunk.

Clearly, an acoustic code isn't the only one used in STM. According to Wickelgren (1973), the kind of coding might reflect the processing which has occurred in a given context, rather than being a property of the memory store itself (see pages 294–296).

The study of brain-damaged patients

Anterograde amnesia and the amnesic syndrome

If STM and LTM really are distinct, then there should be certain kinds of brain damage which impair one without affecting the other. One such form of brain damage is *anterograde amnesia*.

CASE STUDY 17.1 H.M. (Milner *et al.*, 1968)

- H.M. is probably the single most studied amnesic patient in the history of neuropsychology (Rose, 2003).
- He'd been suffering epileptic fits of devastating frequency since the age of 16. In 1953 (aged 27), he underwent surgery aimed at alleviating his epilepsy. The anterior two-thirds of his hippocampus and amygdala, plus part of the temporal lobe (on both sides of his brain) were removed (see Chapter 4).
- While this was fairly successful in curing his epilepsy, at the time the role of these brain structures in memory was unknown, and he was left with severe *anterograde amnesia*, that is he has near normal memory for anything learned *before* the surgery, but severe memory deficits for events that occurred afterwards.
- His STM is generally normal. He can retain verbal information for about 15 seconds without rehearsal, and for much longer with rehearsal. But he cannot transfer information into LTM or, if he can, is unable to retrieve it. He seems entirely incapable of remembering any new fact or event.
- He has almost no knowledge of current affairs, because he forgets all the news almost as soon as he's read about it. He has no idea what time of day it is unless he's just looked at the clock, he cannot remember that his father has died or that his family has moved house, and he rereads the same magazine without realising he's already read it.
- People he met after the operation remain, in effect, total strangers to him, and he has to 'get to know them' afresh each time they come into his house. Brenda Milner has known him for 25 years, yet she's a stranger to him each time they meet.
- He's able to learn and remember perceptual and motor skills, although he has to be reminded each day just what skills he has. However:

> *... new events, faces, phone numbers, places, now settle in his mind for just a few seconds or minutes before they slip, like water through a sieve, and are lost from his consciousness. (Blakemore, 1988)*

An equally dramatic, but in many ways more tragic case is that of Clive Wearing.

CASE STUDY 17.2 Clive Wearing (based on Baddeley, 1990; Blakemore, 1988)

- Clive Wearing was the chorus master of the London Sinfonietta and a world expert on Renaissance music, as well as a BBC radio producer.

- In March 1985 he suffered a rare brain infection caused by the cold sore virus (Herpes simplex). The virus attacked and destroyed his hippocampus, along with parts of his cortex.
- Like H.M., he lives in a snapshot of time, constantly believing that he's just awoken from years of unconsciousness. For example, when his wife, Deborah, enters his hospital room for the third time in a single morning, he embraces her as if they'd been parted for years, saying, 'I'm conscious for the first time' and 'It's the first time I've seen anybody at all'.
- At first his confusion was total and very frightening to him. Once he held a chocolate in the palm of one hand, covered it with the other for a few seconds until its image disappeared from his memory. When he uncovered it, he thought he'd performed a magic trick, conjuring it up from nowhere. He repeated it again and again, with total astonishment and growing fear each time.
- Like H.M., he can still speak and walk, as well as read music, play the organ and conduct. In fact, his musical ability is remarkably well preserved.
- Also like H.M, he can learn new skills (e.g. mirror-reading). Over the course of a few days of testing, the speed of reading such words doubles, and it can be done just as well three months later. Yet for Clive, it's new every time.
- But unlike H.M., his capacity for remembering his earlier life is extremely patchy. For example, when shown pictures of Cambridge (where he'd spent four years as an undergraduate and had often visited subsequently) he only recognised King's College Chapel – the most distinctive Cambridge building – but not his own college. He couldn't remember who wrote *Romeo and Juliet,* and he thought the Queen and the Duke of Edinburgh were singers he'd known from a Catholic church.
- According to Deborah, 'without consciousness he's in many senses dead'. In his own words, his life is 'Hell on earth – it's like being dead – all the bloody time'.

ASK YOURSELF...

- In what ways do the cases of H.M. and Clive Wearing support the multi-store model?
- In what ways do they challenge it?

Atkinson and Shiffrin regard the kind of memory deficits displayed by H.M. and Clive Wearing as 'perhaps the single most convincing demonstration of a dichotomy in the memory system'. According to Parkin (1987), the *amnesic syndrome* isn't a general deterioration of memory function, but a selective impairment in which some functions (such as learning novel information) are severely impaired, while others (including memory span and language) remain intact.

If amnesics do have an intact STM, they should show a similar recency effect (based on STM) but a poorer primacy effect (based on LTM) compared with normal controls. This is exactly what's found (e.g. Baddeley & Warrington, 1970). These results have led most psychologists to accept that in the amnesic syndrome, STM function is preserved but LTM function is impaired.

However, this difference in STM and LTM functioning could mean that:

- the problem for amnesics is one of transfer from STM to LTM, which is perfectly consistent with the MSM, or, alternatively
- amnesics have difficulties in retrieval from LTM (Warrington & Weiskrantz, 1968, 1970); this interpretation is more consistent with Craik & Lockhart's (1972) levels-of-processing approach.

Another major implication of cases such as those of H.M. and Clive Wearing is that the multi-store model's 'unitary' LTM is a gross oversimplification (see the next section).

Retrograde amnesia

In retrograde amnesia, a patient fails to remember what happened *before* the surgery or accident that caused the amnesia. It can be caused by head injuries, electroconvulsive therapy (ECT: see Chapter 45), carbon monoxide poisoning, and extreme stress (see Chapter 12). As in anterograde amnesia, there's typically little or no disruption of STM, and the period of time for which the person has no memories may be minutes, days or even years. When retrograde amnesia is caused by brain damage, it's usually accompanied by anterograde amnesia. Similarly, patients with Korsakoff's syndrome (caused by severe, chronic alcoholism involving damage to the hippocampus) usually experience both kinds of amnesia.

Retrograde amnesia seems to involve a disruption of *consolidation* whereby, once new information has entered LTM, time is needed for it to become firmly established physically in the brain (see the discussion of forgetting, pages 299–304).

ALTERNATIVES TO THE MSM

Multiple forms of LTM

Episodic and semantic memory

Despite their brain damage, H.M. and Clive Wearing retained many skills, both general and specific (such as talking, reading, walking, playing the organ). They were also capable of acquiring (and retaining) new skills – although they didn't know that they had them! This suggests very strongly that there are different kinds of LTM. But as far as the MSM is concerned, there's only 'LTM' (LTM is *unitary*).

Box 17.1 Episodic and semantic memory (Tulving, 1972)

- **Episodic memory** (EM) is an 'autobiographical' memory responsible for storing a record of our past experiences – the events, people, objects and so on which we've personally encountered.
- EM usually includes details about the particular time and place in which objects and events were experienced (they have a spatio-temporal context: e.g. 'Where did you go on your holiday last year?' and 'What did you have for breakfast this morning?'). They have a subjective (self-focused) reality, but most could, in principle, be verified by others.
- **Semantic memory** (SM) is our store of general, factual knowledge about the world, including concepts, rules and language, 'a mental thesaurus, organised knowledge a person possesses about words and other verbal symbols, their meanings and referents' (Tulving, 1972).
- SM can be used without reference to where and when that knowledge was originally acquired. For example, we don't remember 'learning to speak' – we just 'know English' (or whatever our native language happens to be). But SM can also store information about ourselves. For example, if we're asked how many brothers and sisters we have, or how much we like psychology, we don't have to remember specific past experiences in order to answer.

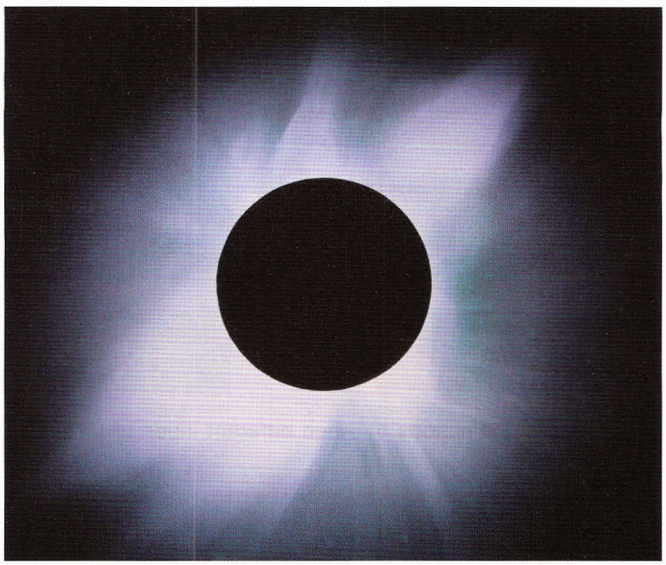
Our 'general' knowledge about, say, computers (part of our SM) is built up from past experiences with particular computers (part of EM), through abstraction and generalisation. This suggests that, instead of regarding EM and SM as two quite distinct systems within the brain (which is what Tulving originally intended), it might be more valid to see SM as made up from multiple EMs (Baddeley, 1995).

Autobiographical vs experimental EM

Tulving maintained that EM is synonymous with *autobiographical memory* (AM). For example, the forgetting of words in a free-recall task can be thought of as a failure in our EM. Clearly, we already know the words as part of our SM, but we've failed to remember that they appeared *in that particular list* just presented to us. However, Cohen (1993) argues that learning word lists isn't what most people understand by AM. Instead, AM is a special kind of EM, concerned with specific life events that have personal significance. Accordingly, she distinguishes between autobiographical EM and *experimental* EM; taking part in an experiment in which we're required to learn lists of words is an example of the latter.

Flashbulb memories

Flashbulb memories are a special kind of EM, in which we can give vivid and detailed recollections of where we were and what we were doing when we first heard about some major public national or international event (Brown & Kulik, 1977).



ASK YOURSELF...

- Where were you, and what were you doing, at the time of the total eclipse of the sun in the summer of 1999?

According to Brown & Kulik (1982), a neural mechanism is triggered by events that are emotionally arousing, unexpected or extremely important, with the result that the whole scene becomes 'printed' on the memory. However, Neisser (1982) argued that the durability of flashbulb memories stems from their frequent rehearsal and reconsideration after the event. Also, the detail and vividness of people's memories aren't necessarily signs of their accuracy – we can be very confident about something and still be mistaken!

Procedural vs declarative memory

Procedural memory (PM) refers to information from LTM which cannot be inspected consciously (Anderson, 1985; Tulving, 1985). For example, riding a bike is a complex skill which is even more difficult to describe. In the same way, native speakers of a language cannot usually describe the complex grammatical rules by which they speak correctly (perhaps because they weren't learnt consciously in the first place: see Chapter 19). By contrast, EM and SM are both amenable to being inspected consciously, and the content of both can be described to another person.

Cohen & Squire (1980) distinguish between PM and *declarative memory*, which corresponds to Ryle's (1949) distinction between *knowing how* and *knowing that* respectively (see Figure 17.7). Anderson (1983) argues that when we initially learn something, it's learned and encoded declaratively, but with practice it becomes compiled into a procedural form of knowledge. (This is similar to the distinction between controlled/automatic processing discussed in Chapter 13.)

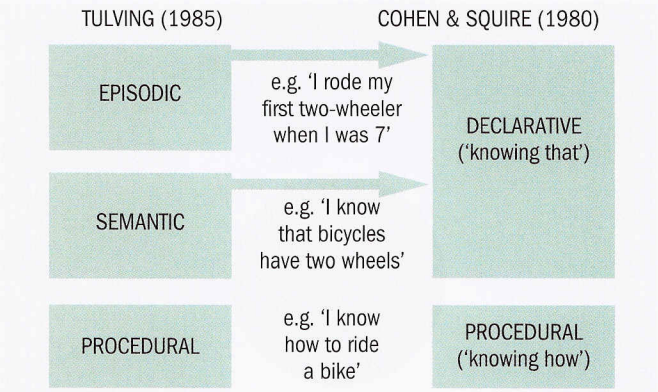


Figure 17.7 Distinctions between different kinds of LTM

ASK YOURSELF...

- How do these different types of LTM help us understand the memory deficits of H.M. and Clive Wearing?

Most aspects of their PMs seemed to be intact, but both their EM and SM were partially impaired. For instance, H.M. was given extensive training (by Gabrieli *et al.*, 1983) in the task of learning the meaning of unfamiliar words which had come into popular use since his operation. He made very little progress, despite extensive practice every day for ten days.

Most other amnesics similarly fail to update their SMs to take account of changes in the world since onset of their dysfunction (Eysenck & Keane, 1990). For example, many don't know the name of the current Prime Minister or President, and have very poor recognition for faces of people who've become famous only quite recently (Baddeley, 1984).

The major problem seems to involve recent *declarative* memory. We saw earlier that Clive Wearing denied all knowledge of having learnt to mirror-read. Similarly, H.M. was trained to solve the Tower of Hanoi problem (see Chapter 20) over several days, but each time he was presented with it he denied ever having seen it before. Yet their performance on these two tasks steadily improved. As Rose (2003) puts it:

> ... procedural memory continued to testify to the truth of what declarative memory denied.

PM involves more automatic processes, and allows patients to demonstrate learning without the need for conscious recollection of the learning process. But declarative learning/memory involves conscious recollection of the past. Damage to a number of cortical and subcortical areas (including the temporal lobes, hippocampus and mamillary bodies) seriously impairs declarative memory in amnesic patients. PM doesn't appear to be impaired by damage to these areas (Baddeley, 1995).

The working-memory (WM) model: rethinking STM

In their MSM, Atkinson and Shiffrin saw STM as a system for temporarily holding and manipulating information. However, Baddeley & Hitch (1974) criticised the model's concept of a *unitary* STM. While accepting that STM rehearses incoming information for transfer to LTM, they argued that it was much more complex and versatile than a mere 'stopping-off station' for information.

ASK YOURSELF...

- How does Miller & Selfridge's (1950) experiment (see page 289) demonstrate the two-way flow of information between STM and LTM?

Box 17.2 The two-way flow of information between STM and LTM

- It's highly unlikely that STM contains only new information, and more likely that information is retrieved from LTM for use in STM.
- For example, the string of numbers 18561939 may appear to be unrelated. However, they can be 'chunked' into one unit according to the rule 'the years in which Sigmund Freud was born and died'.
- If we can impose meaning on a string of digits, we must have learned this meaning previously, the previously learned rule presumably being stored in LTM. Information has flowed not only from STM to LTM, but also in the opposite direction.
- A vivid illustration of this comes from studies of people who are experts in some particular field. De Groot (1966), for example, showed that expert chess players had phenomenal STMs for the positions of chess pieces on a board, provided they were organised according to the rules of chess. When the pieces were arranged randomly, recall was no better than that of non-chess players. Chess experts use information about the rules of chess, stored in LTM, to aid recall from STM.

Other examples of how 'expertise' can increase STM capacity for information include the observation that avid football supporters can remember match scores more accurately than more casual fans (Morris *et al.*, 1985). Also, experienced burglars can remember details of houses seen in photographs a few moments before better than police officers or householders can (Logie *et al.*, 1992).

These examples show that STM is an active store used to hold information which is being manipulated. According to Groome *et al.* (1999), working memory (WM) is like the computer screen, a kind of mental workspace where various operations are performed on current data. By contrast, LTM resembles the computer's memory ('storage memory'), which holds large amounts of information in a fairly passive state for possible future retrieval. WM is a cognitive function that:



While some card games are largely a matter of chance, others require considerable expertise

- helps us keep track of what we're doing or where we are from moment to moment
- holds information long enough to allow us to make a decision, dial a telephone number, or repeat a strange foreign word that we've just heard.

Instead of a single, simple STM, Baddeley & Hitch (1974) proposed a more complex, multi-component WM. This comprises a *central executive*, which is in overall charge, plus sub- or *slave systems*, whose activities are controlled by the central executive. These are the *articulatory* (or *phonological*) loop and the *visuospatial scratch* (or *sketch*) pad.

The central executive

This is thought to be involved in many higher mental processes, such as decision-making, problem-solving and making plans (see Chapter 20). More specifically, it may coordinate performance on two separate tasks, and attend selectively to one input while inhibiting others (Baddeley, 1996). Although capacity-limited, it's very flexible and can process information in any sense modality (it's *modality-free*). It resembles a *pure attentional system* (Baddeley, 1981: see Chapter 13).

The articulatory (or phonological) loop

This is probably the most extensively studied component of the model. It was intended to explain the extensive evidence for acoustic coding in STM (Baddeley, 1997). It can be thought of as a verbal rehearsal loop used when, for example, we try to remember a telephone number for a few seconds by saying it silently to ourselves. It's also used to hold words we're preparing to speak aloud. It uses an articulatory/phonological code, in which information is represented as it would be spoken. For this reason, it's been called the *inner voice*.

Its name derives from the finding that its capacity isn't limited by the number of items it can hold, but by the length of time taken to recite them (Baddeley *et al.*, 1975). This is similar to the way that the faster you recite something into a microphone, the more words you can record on a short loop of recording tape (Groome *et al.*, 1999).

The articulatory loop has two components:

1. a phonological store capable of holding speech-based information, and
2. an articulatory control process based on inner speech.

While memory traces within the store fade after about two seconds, the control process feeds it back into the store (the process underlying silent rehearsal). The control process is also able to convert written material into a phonological code, which is then transferred to the phonological store (Baddeley, 1997).

The visuospatial scratch, or sketch, pad

This can also rehearse information, but deals with visual and/or spatial information as, for example, when we drive along a familiar road, approach a bend, and think about the road's spatial layout beyond the bend (Eysenck, 1986). It uses a visual code, representing information in the form of its visual features such as size, shape and colour. For this reason, it's been called the *inner eye*.

The scratch pad appears to contain separate visual and spatial components. The more active spatial component is involved in movement perception and control of physical actions, while the more passive visual component is involved in visual pattern recognition (Logie, 1995).



Figure 17.8 The visuospatial scratch pad is where we store information about familiar roads, so we know what's round the bend

ASK YOURSELF...

- One way of understanding how WM operates can be gained from trying to calculate the number of windows in your house (Baddeley, 1995). Most of us do this by forming a visual image and then either 'looking' at the house from the outside, or taking a 'mental journey' through its various rooms.
- Complete the following sentences:

To set up and manipulate the image, we need the _____ _____, *and to sub-vocally count the number of windows we need the* _____ _____. *The whole operation is organised and run by the* _____ _____.

(Answers can be found on page 305.)

Research into WM has often used the *concurrent-* (*interference-* or *dual-*) *task* method, in which participants perform two tasks at the same time. Assuming that each slave system's capacity is limited:

- with two tasks making use of the *same* slave system(s), performance on one or both should be worse when they're performed together than when they're performed separately (Baddeley *et al.*, 1975)
- if two tasks require *different* slave systems, it should be possible to perform them as well together as separately.

Some researchers have used *articulatory suppression*, in which the participant rapidly repeats out loud something meaningless (such as 'hi-ya' or 'the').

ASK YOURSELF...

- Explain the reasoning behind the use of articulatory suppression.
- If this method produces poorer performance on another simultaneous task, what can we infer about the slave system involved in the first task?

Articulatory suppression uses up the articulatory loop's resources, so it cannot be used for anything else. If articulatory suppression produces poorer performance on another simultaneous task, then we can infer that this task also uses the articulatory loop (Eysenck & Keane, 1995).

An evaluation of the WM model

- It's generally accepted that (a) STM is better seen as a number of relatively independent processing mechanisms than as the MSM's single unitary store, and (b) attentional processes and STM are part of the same system (they're probably used together much of the time in everyday life).
- The idea that any one slave system (such as the phonological loop) may be involved in the performance of apparently very different tasks (such as memory span, mental arithmetic, verbal reasoning, and reading) is a valuable insight.
- It has practical applications which extend beyond its theoretical importance (Gilhooly, 1996; Logie, 1999: see Box 17.3).
- One weakness of the WM model is that least is known about the most important component, namely the central executive (Hampson & Morris, 1996). It can apparently carry out an enormous variety of processing activities in different conditions. This makes it difficult to describe its precise function, and the idea of a single central executive might be as inappropriate as that of a unitary STM (Eysenck, 1986).

Box 17.3 Working memory and learning to read

- One of the most striking features of children with specific problems in learning to read (despite normal intelligence and a supportive family) is their impaired memory span (Gathercole & Baddeley, 1990).
- They also tend to do rather poorly on tasks which don't test memory directly, such as judging whether words rhyme.
- These children show some form of phonological deficit that seems to prevent them from learning to read (and which is detectable before they have started to learn). This deficit might be related to the phonological loop (see Chapter 40, pages 699–700).

The levels of processing (LOP) model

Rehearsal and the MSM

As we noted above, the MSM sees rehearsal as a key control process which helps to transfer information from STM to LTM. There's also only one type of rehearsal as far as the model is concerned, what Craik & Watkins (1973) call *maintenance* (as opposed to *elaborative*) rehearsal (see Key Study 17.6). This means that what matters is how much rehearsal occurs. But maintenance rehearsal may not even be necessary for storage. Jenkins (1974) found that participants could remember material even though they weren't expecting to be tested – and so were unlikely to have rehearsed the material. This is called *incidental learning*.

According to Craik & Lockhart (1972), it's the *kind* of rehearsal or processing that's important. Craik and Lockhart also considered that the MSM's view of the relationship between structural components and control processes was, essentially, the wrong way round.

ASK YOURSELF...

- How does the MSM see the relationship between structural components and control processes?

According to the MSM, the structural components (sensory memory, STM and LTM) are fixed, while control processes (such as rehearsal) are less permanent. Craik and Lockhart's *levels-of-processing* (LOP) model begins with the proposed control processes. The structural components (the memory system) are what results from the operation of these processes. In other words, memory is a *by-product of perceptual analysis*. This is controlled by the central processor, which can analyse a stimulus (such as a word) on various levels:

- at a superficial (or *shallow*) level, the surface features of a stimulus (such as whether the word is in small or capital letters) are processed
- at an intermediate (*phonemic* or *phonetic*) level, the word is analysed for its sound
- at a deep (or *semantic*) level, the word's meaning is analysed.

The level at which a stimulus is processed depends on both its nature and the processing time available. The more deeply information is processed, the more likely it is to be retained.

KEY STUDY 17.7 Does 'chicken' rhyme with 'wait'? (Craik & Tulving, 1975)

- Craik and Tulving presented participants with a list of words via a tachistoscope. Following each word, participants were asked one of four questions, to which they had to answer 'yes' or 'no'. The four questions were:
  1. Is the word (e.g. TABLE/table) in capital letters? (This corresponds to *shallow* processing.)
  2. Does the word (e.g. hate/chicken) rhyme with 'wait'? (This corresponds to *phonemic* processing.)
  3. Is the word (e.g. cheese/steel) a type of food? (This corresponds to *semantic* processing.)
  4. Would the word (e.g. ball/rain) fit in the sentence 'He kicked the ... into the tree'? (This also corresponds to *semantic* processing.)
- Later, participants were unexpectedly given a recognition test, in which they had to identify the previously presented words which appeared amongst words they hadn't seen.
- There was significantly better recognition of words that had been processed at the deepest (semantic) level (questions 3 and 4). Also, recognition was superior when the answer was 'yes' rather than 'no'.

Elaboration vs distinctiveness

Elaboration (the amount of processing of a particular kind at a particular level) is also important in determining whether material is stored or not. For example, Craik & Tulving (1975) asked participants to decide if a particular (target) word would be appropriate in simple sentences (such as 'She cooked the ...') or complex sentences (such as 'The great bird swooped down and carried off the struggling ...'). When participants were later given a *cued recall test* (the original sentences were again presented but without the target words), recall was much better for those that fitted into the *complex* sentences.

More important than elaboration is *distinctiveness*, which relates to the nature of processing. For example, 'A mosquito is like a doctor because they both draw blood' is more distinctive than 'A mosquito is like a racoon because they both have hands, legs and jaws'. Although the former involves less elaboration, it was more likely to be remembered (Bransford *et al.*, 1979). However, because LOP, elaboration and distinctiveness can occur together, it's often difficult to choose between them, and all three may contribute to remembering.

Evaluation of the LOP model

- The model was proposed as a new way of interpreting existing data, and to provide a conceptual framework for memory research. Prior to 1972, it was assumed that the same stimulus would typically be processed in a very similar way by all participants on all occasions. The LOP model proposed that perception, attention and memory are interrelated processes.
- It's mainly descriptive rather than explanatory (Eysenck & Keane, 1995). In particular, it fails to explain why deeper processing leads to better recall.
- It's difficult to define/measure depth *independently* of a person's actual retention score. So, if 'depth' is defined as 'the number of words remembered', and 'the number of words remembered' is taken as a measure of 'depth', this definition of depth is circular (what's being defined is part of the definition!). There's no generally accepted way of independently assessing depth, which 'places major limits on the power of the levels-of-processing approach' (Baddeley, 1990).
- Some studies have directly contradicted the model. For example, Morris *et al.* (1977) predicted that stored information (deep or shallow) would be remembered only to the extent that it was relevant to the memory test used. So, deep or semantic information would be of little use if the memory test involved learning a list of words and later selecting those that rhymed with the stored words – but shallow rhyme information would be very relevant. The prediction was supported.
- According to Parkin (1993), different orienting tasks vary in the extent to which they require participants to treat the stimulus as a word (e.g. 'Is 'tiger' a mammal?' compared with 'Does 'tiger' have two syllables?'). Yet retention tests *always* require participants to remember words. Since semantic tasks, by definition, always require attention to be paid to stimuli as words, the superior retention they produce

could reflect the bias of the retention test towards the type of information being encoded. In other words, the orienting task and the retention test are both concerned with the same type of information, which isn't the case when other kinds of task are used.

MEMORY AND THE REPRESENTATION OF KNOWLEDGE

What psychologists have traditionally called knowledge is information that's represented mentally in a particular format and structured or organised in some way (Eysenck & Keane, 1990). This leads to two inter-related questions about the nature of knowledge.

- What format do mental representations take?
- How are these mental representations organised?

This area was neglected until quite recently, when attempts to provide a knowledge base for computer systems stimulated an interest in how 'this enormously important but complex facility operates in people' (Baddeley, 1990).

The organised nature of memory

As we've seen, chunking is a way of increasing STM's limited capacity by imposing a meaning on unrelated items of information. We do this by organising it, giving it a structure that it doesn't otherwise have. As Baddeley (1995) says:

> The secret of a good memory, as of a good library, is that of organisation; good learning typically goes with the systematic encoding of incoming material, integrating and relating it to what is already known.

Organisation can be either imposed by the experimenter (EO) or spontaneously by the participant ('subjective organisation' (SO): Tulving, 1962). Mandler (1967) found that instructions to organise will facilitate learning, even though the participant isn't trying to remember the material. A classic study of organisation is that of Bower *et al.* (1969).

KEY STUDY 17.8 Helpful hierarchies (Bower *et al.*, 1969)

- Bower *et al.* gave participants the task of learning a list of 112 words arranged into conceptual hierarchies.
- For the experimental group, the words were presented as a hierarchy (28 on each of four trials: see Figure 17.9, below), while the control group was shown 28 words on each of four trials presented randomly.
- The former recalled an average of 73 words correctly, while the latter recalled an average of only 21. Clearly, organisation can facilitate retention.

Imagery as a form of organisation

According to Paivio (1969), probably the most powerful predictor of the ease with which words will be learned is their 'concreteness'; that is, how easily a word evokes a mental image. Richardson (1974) tested free recall of a series of 'concrete' and 'abstract' words. By varying the interval between presenting the stimulus and recalling it, he concluded that the 'effect of imageability lies in secondary memory'; in other words, 'concrete' words were recalled significantly more efficiently from LTM (compared with 'abstract' words), whereas there was no difference with recall from STM.

Bower (1972) showed that asking participants to form a mental image of pairs of unrelated nouns (e.g. 'dog' and 'bicycle'), where the two words were interacting in some way, resulted in significantly better recall than when they were instructed merely to memorise the words. Bower considers that the more bizarre the details of the image, the better (for example, a dog riding a bicycle).

Wollen *et al.* (1972) studied the relative contribution of concreteness/interactiveness and bizarreness by giving pictures to participants to help them learn paired associates, such as 'piano–cigar'. Figure 17.10 (page 296) shows all four combinations of these two dimensions. Wollen *et al.* found a large effect of interaction, but not of bizarreness, which suggests that interaction promotes elaborative encoding that aids later recall. However, the study used an unrelated design, and when related designs are used, bizarre images stand out from the rest as the most distinctive, producing the best recall (Anderson, 1995a).

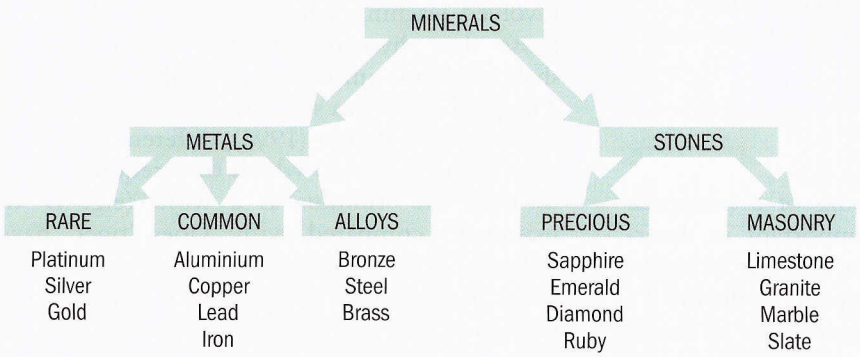


Figure 17.9 An example of a conceptual hierarchy used in Bower *et al.*'s (1969) experiment

According to Paivio's (1986) *dual-coding hypothesis*, mental activity involves interaction between two interconnected but functionally independent sub-systems:

1. a *non-verbal imagery system*, which processes information about objects and events in the form of *imagens*, and
2. a *verbal system*, specialised for handling speech and writing. Each known word is represented by a *logogen*.

The two systems are connected via *referential links*, which allow a word to be associated with its relevant image and vice versa. This can help explain the better learning of concrete words: they activate both verbal and non-verbal codes, while abstract words activate only a verbal code. Similarly, pictures are easier to memorise than words representing those pictures: a picture is more likely to activate a verbal code as well as an imaginal one, while words are less likely to evoke a picture (especially if they're abstract) (Parkin, 1993).

A dramatic illustration of the role of imagery is the man with the exceptional memory documented by Luria (1968).

CASE STUDY 17.3: The mind of a mnemonist (Luria, 1968)

- 'S.' was a reporter for a Moscow newspaper in the early 1920s. His astounding ability to produce reports, rich in the minutest factual detail, without ever taking notes, so amazed the editor that he sent him to Luria for psychological evaluation.
- There seemed to be no limit either to his memory's capacity or durability. He could commit to memory, in a few minutes, long lists of numbers and recall them perfectly, hours, days or weeks later. Luria tested him 30 years after they first met, and S. could still remember perfectly the numbers of tables he'd previously learned!
- He seemed to have spontaneously developed *mnemonic tricks*. For example, he would associate, in his mind's eye, lists of objects he wished to remember with familiar features of a street or some other familiar place. He mentally placed each object at some point on the scene; all he had to do to remember the list was to recall the mental image of the scene and locate each object on display. He would imagine himself walking along a Moscow street looking in each hiding place for the object he'd put there (this is the method of loci).
- His recall was accompanied by extreme *synaesthesia*, in which sensory information from one modality evokes a sensation in another. For example, colours are associated with tastes. He once said to Luria, 'What a crumbly yellow voice you have'. (See Chapter 5.)
- His peculiar problem was his apparent *inability to forget*. He couldn't hold down an ordinary job, and ended up as a professional memory man (Rose, 2003).

Knowledge and semantic memory

The hierarchical network model

The *hierarchical network model* of SM (Collins & Quillian, 1969, 1972) is concerned with our memory for words and their meanings. As shown in Figure 17.11, SM is

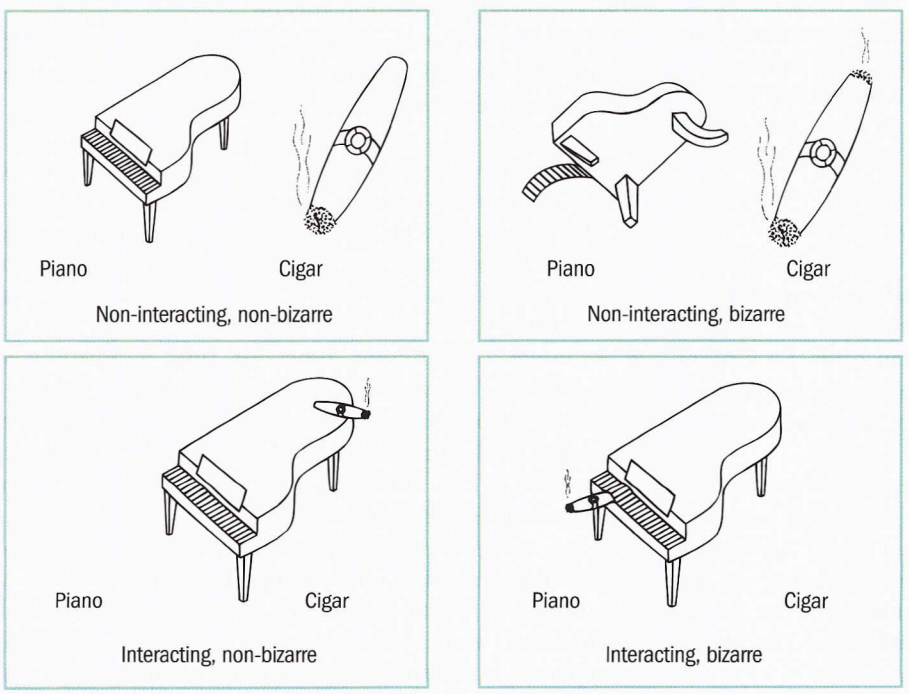


Figure 17.10 Examples of pictures used to associate piano and cigar in the Wollen *et al.* (1972) study of image bizarreness. From Wollen, K.A., Weber, A. & Lowry, D.H., *Cognitive Psychology*, Volume 3. Copyright © 1972 Academic Press

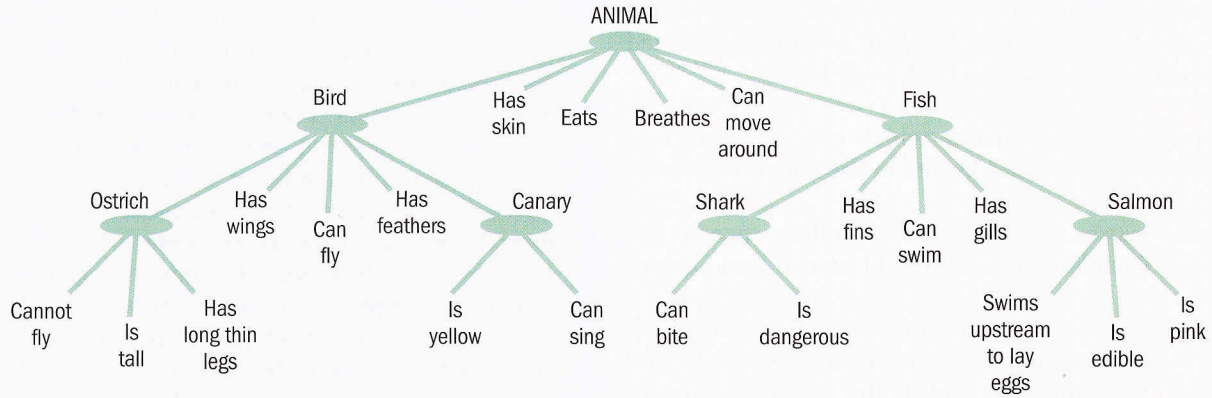


Figure 17.11 Part of the semantic memory network for a three-level hierarchy (from Collins & Quillian, 1969)

portrayed as a network of concepts connected with other concepts by pointers. Each word or concept is represented by a particular node in the network. The meaning of a particular word is given by the configuration of pointers that connect that word with other words.

If we were asked whether the statement 'A canary can sing' is true, we'd need only to find the word 'canary' and retrieve the properties stored with that word. But to verify 'A canary can fly' we'd first have to find 'canary', and then move up one level to 'bird' before retrieving the property 'can fly'. Assuming that it takes time to move from one level to another, it should take longer to verify 'A canary can fly' than to verify 'A canary can sing', and it would take even longer to verify 'A canary has skin'. The model assumes that the various properties stored with each word are scanned simultaneously.

Collins and Quillian presented participants with various sentences, including the examples given above, which they had to judge as true or false by pressing an appropriate button as quickly as possible (reaction time was used as a measure of difficulty). The main finding was that the time taken to decide that a statement is true increased as a function of the number of levels that had to be worked through to verify it. So, as the model predicts, more time was needed to verify 'A canary is an animal' than 'A canary is a bird'.

An evaluation of Collins and Quillian's model

- It takes longer to verify 'A canary is an animal' because there are more animals than birds. So Collins and Quillian's findings could be explained in terms of the relationship between category size and reaction time.
- Some members of a category are more typical than others. Participants respond faster to typical instances ('A canary is a bird') than to atypical ones ('An ostrich is a bird'). That shouldn't happen according to the hierarchical model, since presumably the same distance has to be travelled in both cases (Baddeley, 1990).
- Rips *et al.* (1973) found that it took longer to verify 'A bear is a mammal' than 'A bear is an animal'. This is the *opposite* of what the hierarchical model predicts, since 'animal' is higher up in the hierarchy than 'mammal'.

ASK YOURSELF...
- Could the model be criticised in terms of research into imagery?

- The findings could be explained in terms of how easy (or difficult) it is to imagine concepts at different levels. The higher up the hierarchy you go, the more abstract the category becomes, and the more difficult it becomes to form a mental image of it (it's easier to picture a canary than 'an animal').

The spreading-activation model

In the light of these criticisms, Collins & Loftus (1975) proposed a revised network model. The major changes include the following:

- The network is no longer hierarchically organised, making it more flexible.
- The new concept of *semantic distance* denotes that highly related concepts are located close together, and distance reflects how easily 'excitation' can flow from one node to the next (see Figure 17.12, page 299).
- A range of different types of link is introduced, including *class membership associations* (or 'is a' links – 'A dog is a mammal', including some negative instances, such as 'A dolphin is not a fish'), 'has' links ('An animal has skin'), 'can' links ('A bird can fly'), and 'cannot' links ('An ostrich cannot fly').
- It no longer sees the memory network in terms of logical, hierarchical relationships. Human memory may simply not be as logical and systematic as originally proposed, and it allows for an individual's personal experience and the structure of the environment to act

as at least partial influences on the relationship between concepts.

- The concept of *spreading activation* implies that when two concepts are stimulated, an activation from each spreads throughout the network until they're linked. This takes time, because semantically related concepts are closer together than semantically unrelated concepts.

An evaluation of the spreading-activation model

- Johnson-Laird *et al.* (1984) believe that there are many examples where the interpretation offered by the network will tend, in actual discourse, to be overridden by the constraints of real-world knowledge.
- Take, for instance, 'The ham sandwich was eaten by the soup'. This would appear to be nonsensical until you put it into the context of a restaurant, where waiters/waitresses sometimes label customers in terms of their orders. Johnson-Laird *et al.* call this failure to 'escape from the maze of symbols into the world' the *symbolic fallacy*: you have to know the relationship between symbols and what they refer to.

Schema theory and everyday memory

According to Baddeley (1990), it became increasingly obvious during the 1970s that SM must contain structures considerably larger than the simple concepts involved in network models such as those of Collins and Quillian, and Collins and Loftus. This 'larger unit' of SM is the *schema*, a concept first used by Bartlett (1932) in his research into *reconstructive memory*. Because of the importance of reconstructive memory to eyewitness testimony, I shall postpone discussion of schema theory to Chapter 21.

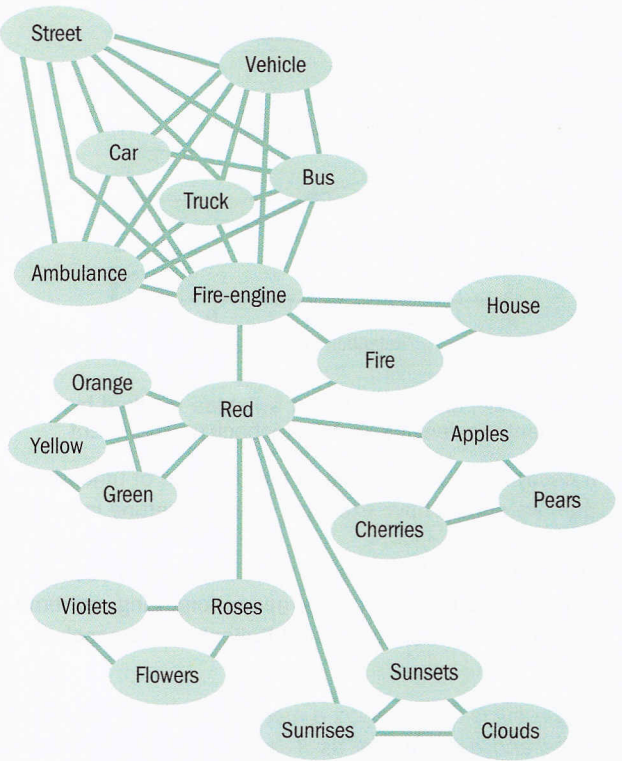


Figure 17.12 An example of a spreading-activation model. The length of each line (or link) represents the degree of association between particular concepts (based on Collins & Loftus, 1975)

THEORIES OF FORGETTING

To understand why we forget, we must recall the distinction between *availability* (whether or not material has been stored) and *accessibility* (being able to retrieve what's been stored). In terms of the MSM, since information must be transferred from STM to LTM for permanent storage:

- availability mainly concerns STM and the transfer of information from STM into LTM
- accessibility has to do mainly with LTM.

Forgetting can occur at the encoding, storage or retrieval stages.

One way of looking at forgetting is to ask what prevents information staying in STM long enough to be transferred to LTM (some answers are provided by *decay* and *displacement theories*). Some answers to the question about what prevents us from locating the information that's already in LTM include those offered by *interference theory*, *cue-dependent forgetting* and *motivated forgetting* (or *repression*: this is discussed in Chapter 21).

Decay theory

Decay (or *trace decay*) theory tries to explain why forgetting increases with time. Clearly, memories must be stored somewhere, the most obvious place being the brain. Presumably, some sort of structural change (the *engram*) occurs when learning takes place. According to decay theory, metabolic processes occur over time which cause the engram to degrade/break down, unless it's maintained by repetition and rehearsal. This results in the memory contained within it becoming unavailable.

Hebb (1949) argued that while learning is taking place, the engram which will eventually be formed is very delicate and liable to disruption (the *active trace*). With learning, it grows stronger until a permanent engram is formed (the *structural trace*) through neurochemical and neuroanatomical changes.

Decay in STM and LTM

The active trace corresponds roughly to STM, and, according to decay theory, forgetting from STM is due to disruption of the active trace. Although Hebb didn't apply the idea of decay to LTM, other researchers have argued that it can explain LTM forgetting if it's assumed that decay occurs through disuse (hence, *decay-through-disuse theory*). So, if certain knowledge or skills aren't

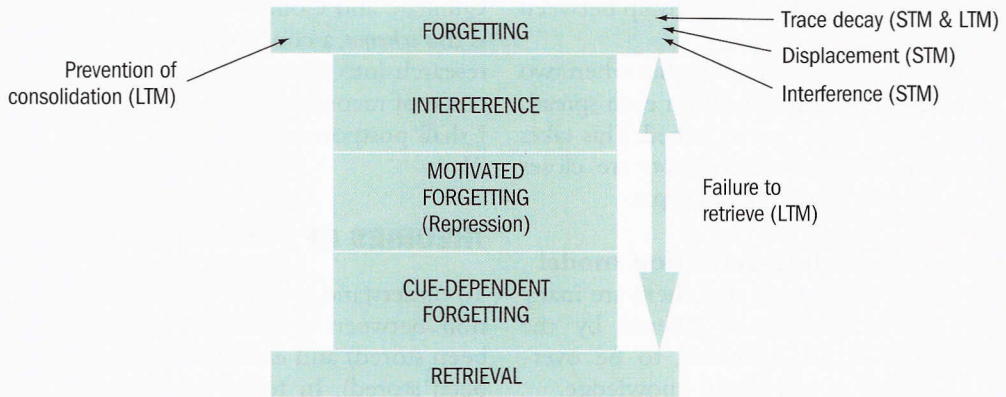


Figure 17.13 Different theories of forgetting, including retrieval failure

used or practised for long periods of time, the corresponding engram will eventually decay away (Loftus & Loftus, 1980).

ASK YOURSELF...

- Try to think of skills/knowledge that, contrary to decay-through-disuse theory, *aren't* lost even after long periods of not being used/practised.

Is forgetting just a matter of time?

Peterson & Peterson's (1959) experiment (see Key Study 17.2) has been taken as evidence for the role of decay in STM forgetting. If decay did occur, then we'd expect poorer recall of information with the passage of time, which is exactly what the Petersons reported.

The difficulty with the Petersons' study in particular, and decay theory in general, is that other possible effects need to be excluded before a decay-based account can be accepted. The ideal way to study the role of decay in forgetting would be to have people receive information and then do nothing, physical or mental, for a period of time. If recall was poorer with the passage of time, it would be reasonable to suggest that decay had occurred. Such an experiment is, of course, impossible. However, Jenkins & Dallenbach (1924) were the first to attempt an approximation to it.

KEY STUDY 17.9 If you want to remember, sleep on it (Jenkins & Dallenbach, 1924)

- Participants learnt a list of ten nonsense syllables. Some then went to sleep immediately (approximating the ideal 'do nothing' state), while the others continued with their normal activities.
- After intervals of one, two, four or eight hours, all participants were tested for their recall of the syllables.
- While there was a fairly steady increase in forgetting as the retention interval increased for the 'waking' participants, this wasn't true for the sleeping participants (see Figure 17.14).

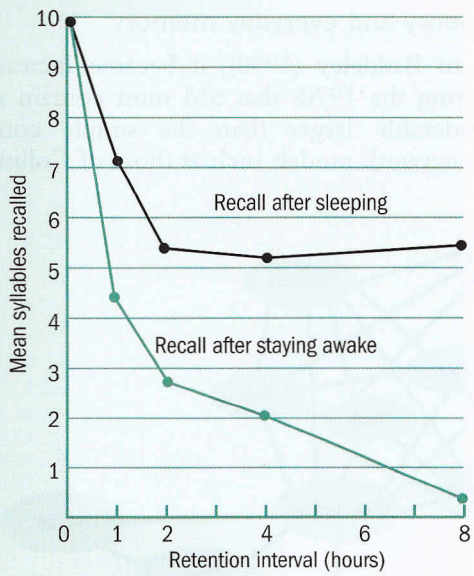


Figure 17.14 Mean number of syllables recalled by participants in Jenkins and Dallenbach's experiment

- If decay is a natural result of the passage of time alone, then we should have expected equal forgetting in both groups.
- The results suggest that it's what happens in between learning and recall that determines forgetting, not time as such. This led Jenkins and Dallenbach to conclude that:

Forgetting is not so much a matter of decay of old impressions and associations as it is a matter of interference, inhibition or obliteration of the old by the new.

Interference theory is discussed on pages 302–304.

Although some data exist suggesting that neurological breakdown occurs with age and disease (such as Alzheimer's disease), there's no evidence that the major cause of forgetting from LTM is neurological decay (Solso, 1995).

Displacement theory

In a limited-capacity STM system, forgetting might occur through *displacement*. When the system is 'full', the oldest material in it would be displaced ('pushed out') by incoming new material. This possibility was explored by Waugh & Norman (1965) using the *serial probe task*. Participants were presented with 16 digits at the rate of either one or four per second. One of the digits (the 'probe') was then repeated, and participants had to say which digit followed the probe. Presumably:

- if the probe was one of the digits at the beginning of the list, the probability of recalling the digit that followed would be small, because later digits would have displaced earlier ones from the system
- if the probe was presented towards the end of the list, the probability of recalling the digit that followed would be high, since the last digits to be presented would still be available in STM.

When the number of digits following the probe was small, recall was good, but when it was large, recall was poor. This is consistent with the idea that the earlier digits are replaced by later ones.

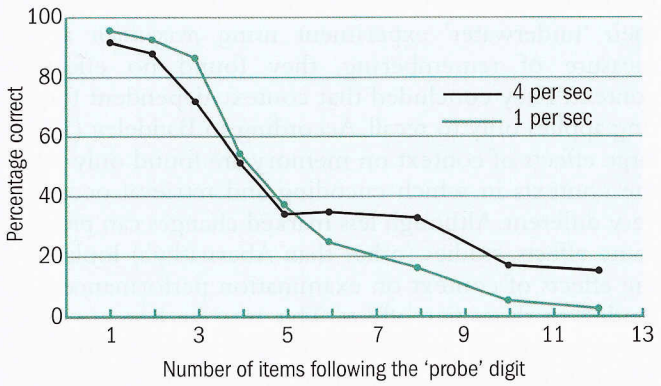


Figure 17.15 Data from Waugh and Norman's serial probe experiment

ASK YOURSELF...

- Waugh and Norman also found that recall was generally better with the faster (4 per second) presentation rate. How does this support decay theory?

Since less time had elapsed between presentation of the digits and the probe in the four-per-second condition, there would have been less opportunity for those digits to have decayed away. This makes it unclear whether displacement is a process distinct from decay.

Retrieval-failure theory and cue-dependent forgetting

According to *retrieval-failure theory*, memories cannot be recalled because the correct retrieval cues aren't being used. The role of retrieval cues is demonstrated by the *tip-of-the-tongue phenomenon* (TOT), in which we know that we know something but cannot retrieve it at that particular moment in time (Brown & McNeill, 1966).

KEY STUDY 17.10 It's on the tip of my tongue (Brown & McNeill, 1966)

- Brown and McNeill gave participants dictionary definitions of unfamiliar words, and asked them to provide the words themselves. Most participants either knew the word or knew that they didn't know it.
- Some, however, were sure they knew the word but couldn't recall it (it was on the tip of their tongue). About half could give the word's first letter and the number of syllables, and often offered words which sounded like the word or had a similar meaning. This suggests that the required words were in memory, but the absence of a correct retrieval cue prevented them from being recalled.
- Examples of definitions used by Brown and McNeill:

1. A small boat used in the harbours and rivers of Japan and China, rowed with a scull from the stern, and often having a sail
2. Favouritism, especially governmental patronage extended to relatives
3. The common cavity into which the various ducts of the body open in certain fish, reptiles, birds and mammals.

Answers: sampan; nepotism; cloaca

Tulving & Pearlstone (1966) read participants lists of varying numbers of words (12, 24 or 48) consisting of categories (e.g. animals) of one, two or four *exemplars* (e.g. dog) per list, plus the category name. Participants were instructed to try to remember only the exemplars. Half the participants (group 2) free-recalled the words and wrote them down on blank pieces of paper. The other half (group 1) was given the category names. Group 1 recalled significantly more words, especially on the 48-item list. However, when group 2 was given the category names, recall improved (see Figure 17.16).

This illustrates very well the availability/accessibility distinction. The category name acted as a contextual cue, helping to make accessible what was available. Group 2 participants knew more than they could actually retrieve under the cue-less conditions.

Tulving (1968) showed participants a list of words, and then asked them to write down as many as they could remember in any order. Later, and without being

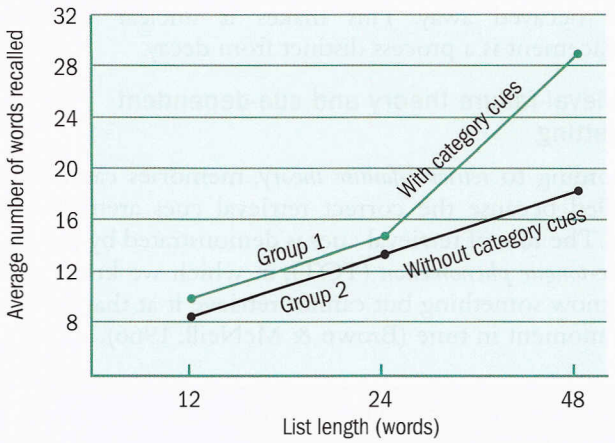


Figure 17.16 Average number of words recalled with and without cues in Tulving & Pearlstone's (1966) experiment

presented with the list again or seeing the words they'd written down previously, participants were asked to recall them. Later still, they were asked a third time to recall the words on the original list.

Table 17.2 Typical results from Tulving's experiment

Trial 1	Trial 2	Trial 3
Table	Table	Table
Driver	Escalator	Driver
Escalator	Apple	Escalator
Apple	Railway	Apple
Railway	Pen	Pen
Pen		Fountain

ASK YOURSELF...

- As Table 17.2 shows, the same words weren't recalled across the three trials. Why is this finding difficult for decay theory to explain?

Decay theory wouldn't predict the recall of a word on trial 3 if it wasn't recalled on trials 1 or 2. For it to be recalled on a later trial, it couldn't have decayed away on the earlier trials. But retrieval-failure theory can explain these findings by arguing that different retrieval cues were involved in the three trials.

According to Tulving's (1983) *encoding-specificity principle* (ESP), recall improves if the same cues are present during recall as during the original learning. In Tulving and Pearlstone's experiment, the category names were presented together with the exemplars for group 1. Presumably, they were encoded at the time of learning. The ESP explains why recall is sometimes superior to recognition (even though recognition is generally considered to be easier than recall: see pages 286–287).

Tulving (1974) used the term *cue-dependent forgetting* to refer jointly to *context-dependent* and *state-dependent forgetting*.

Table 17.3 Cue-dependent forgetting

Context-dependent forgetting	State-dependent forgetting
Occurs in absence of relevant environmental or contextual variables. These represent *external cues*.	Occurs in absence of relevant psychological or physiological variables. These represent *internal cues*.
Abernathy (1940): One group had to learn and then recall material in the same room, while a second group learned and recalled in different rooms. The first group's recall was superior.	Clark *et al.* (1987): Victims' inabilities to recall details of a violent crime may be due at least partly to the fact that recall occurs in a less emotionally aroused state. (See Chapter 21.)
Godden & Baddeley (1975): Divers learned lists of words either on land or 15 ft under water. Recall was then tested in the same or a different context. Those who learned and recalled in different contexts showed a 30% deficit compared with those who learned and recalled in the same context.	McCormick & Mayer (1991): The important link may be between mood and the sort of material being remembered. So we're more likely to remember happy events when we're feeling happy rather than sad.

Interestingly, when Godden & Baddeley (1980) repeated their 'underwater' experiment using *recognition* as the measure of remembering, they found no effect of context. They concluded that context-dependent forgetting applies only to recall. According to Baddeley (1995), large effects of context on memory are found only when the contexts in which encoding and retrieval occur are very different. Although less marked changes can produce some effects, studies (other than Abernathy's) looking at the effects of context on examination performance have tended to show few effects. This may be because when we're learning, our surroundings aren't a particularly salient feature of the situation, unlike our internal state (such as our emotional state).

Interference theory

According to *interference theory*, forgetting is influenced more by what we do before or after learning than by the mere passage of time (see Key Study 17.9).

- In *retroactive interference/inhibition* (RI), later learning interferes with the recall of earlier learning. For example, if you originally learned to drive in a manual car, then learned to drive an automatic car, when returning to a manual, you might try to drive it as though it was an automatic.

- In *proactive interference/inhibition* (PI), earlier learning interferes with the recall of later learning. For example, say you learned to drive a car in which the indicator lights are turned on by using the stalk on the left of the steering wheel, and the windscreen wipers by the stalk on the right. After passing your driving test, you buy a car in which this arrangement is reversed. When you're about to turn left or right, you activate the windscreen wipers!

Interference theory has been extensively studied in the laboratory using paired-associate lists (see page 287). The usual procedure for studying interference effects is shown in Figure 17.17.

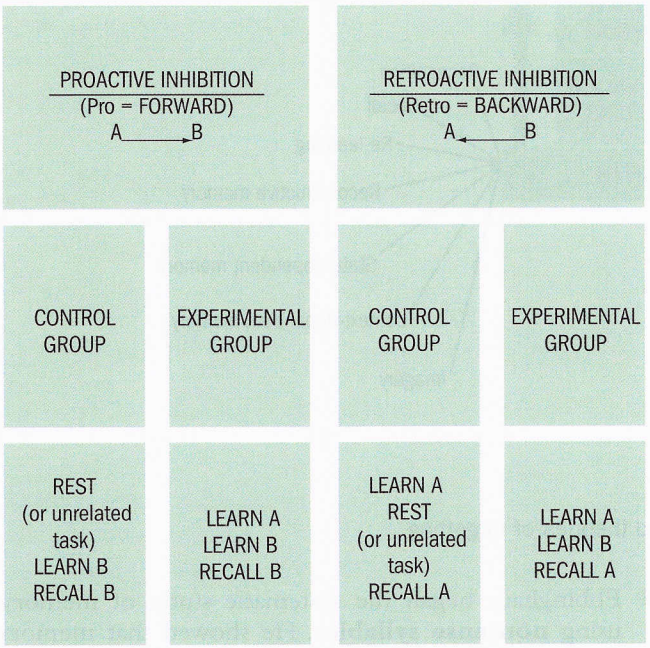


Figure 17.17 Experimental procedure for investigating retroactive and proactive interference

Usually, the first member of each pair in list A is the same as in list B, but the second member of each pair is different in the two lists.

- In RI, the learning of the second list interferes with recall of the first list (the interference works *backwards* in time).
- In PI, the learning of the first list interferes with recall of the second list (the interference works *forwards* in time).

Interference theory offers an alternative explanation of Peterson & Peterson's (1959) data (see Key Study 17.2). Keppel & Underwood (1962) noted that the Petersons gave two practice trials, and were interested in how these practice trials affected those in the actual experiment. While there was no evidence of forgetting on the first trial, there was some on the second and even more on the third.

Although forgetting can occur on the first trial (supporting decay theory), Keppel and Underwood's finding that performance didn't decline until the second trial suggests that PI was occurring in the Petersons' experiment.

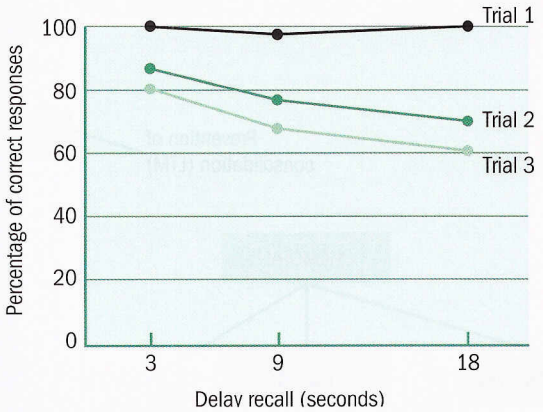


Figure 17.18 Mean percentage of items correctly recalled on trials 1, 2 and 3 for various delay times (based on Keppel & Underwood, 1962)

Like Keppel and Underwood, Wickens (1972) found that participants became increasingly poor at retaining information in STM on successive trials. However, when the category of information was changed, they performed just as well as on the first list. So performance with lists of numbers became poorer over trials, but if the task was changed to lists of letters, it improved. This is called *release from proactive inhibition*.

Limitations of laboratory studies of interference theory

The strongest support for interference theory comes from laboratory studies. However, the following points should be borne in mind:

- Learning in such studies doesn't occur in the same way as it does in the real world, where learning of potentially interfering material is spaced out over time. In the laboratory, learning is artificially compressed in time, which maximises the likelihood that interference will occur (Baddeley, 1990). Such studies therefore lack ecological validity.
- Laboratory studies tend to use nonsense syllables as the stimulus material. When meaningful material is used, interference is more difficult to demonstrate (Solso, 1995).
- When people have to learn, say, the response 'bell' to the stimulus 'woj', the word 'bell' isn't actually learned in the laboratory, since it's already part of SM. What's being learned (a specific response to a specific stimulus in a specific laboratory situation) is stored in EM. SM is much more stable and structured than EM, and so is much more resistant to interference effects. No

amount of new information will cause someone to forget the things they know that are stored in their SM (Solso, 1995).

- However, in support of interference theory, it's generally agreed that if students have to study more than one subject in the same time-frame, these should be as *dissimilar* as possible.

ASK YOURSELF...

- Think of examples of subjects that (a) should definitely *not* be studied together in the same time-frame, and (b) *could* be studied together without much risk of interference.

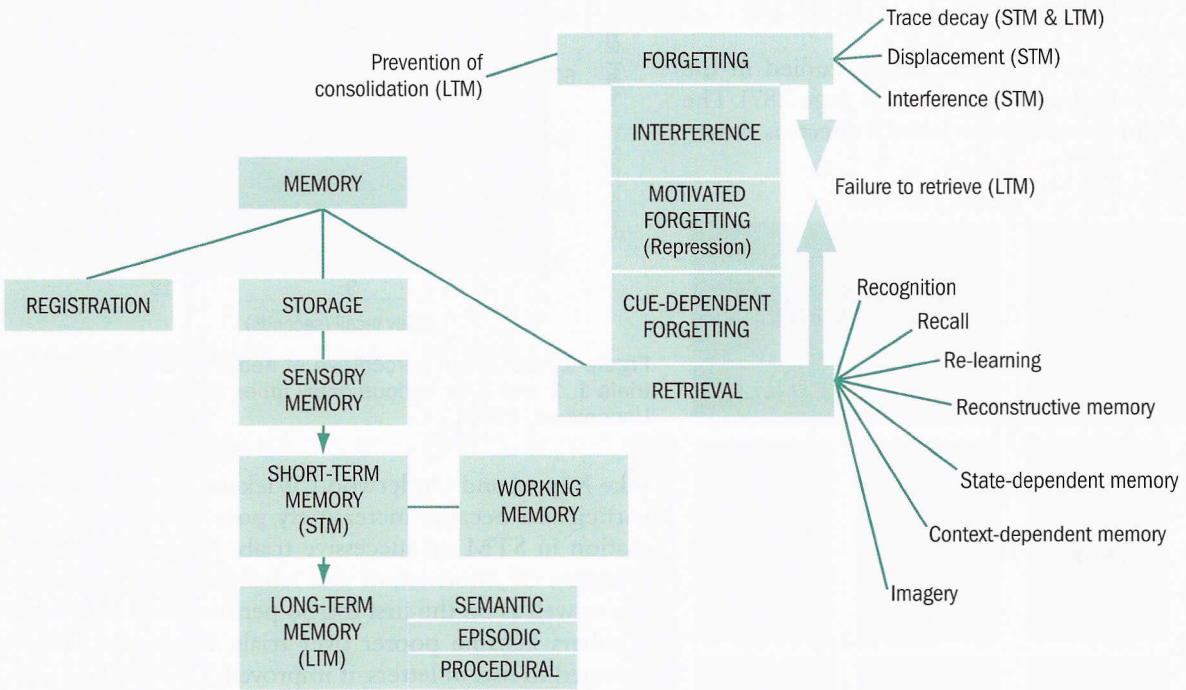


Figure 17.19 A summary of the three components of memory and theories of forgetting

CONCLUSIONS

In the *Introduction and overview*, I quoted Blakemore, who claims that, without memory, there'd be no language, art, science or culture. He also describes what it would be like for an individual with no memory. In a similar fashion, Rose (2003) argues that:

> ... Memory defines who we are and shapes the way we act more closely than any other single aspect of our personhood ...

Whatever happens to us (including losing a limb), we're still, in an important sense, recognisably ourselves provided our memories are intact. However:

> ... Lose your memory and you, as you, cease to exist ... (Rose, 2003)

CHAPTER SUMMARY

- Memory can be defined as the **retention of learning** or **experience**. Learning and memory are **interdependent** processes.
- Ebbinghaus began the systematic study of memory, using **nonsense syllables**. He showed that memory declined very rapidly at first, then levelled off.
- Memory is now studied largely from an **information-processing approach**, which focuses on **registration/encoding**, **storage**, and **retrieval**. Storage corresponds to **availability**, retrieval to **accessibility**.
- Techniques for measuring memory include **recognition**, **recall** (**serial** or **free**), **paired associates recall**, and the **memory-span procedure**.
- James's distinction between **primary** and **secondary memory** corresponds to that between short-term memory (STM) and long-term memory (LTM).
- **Sensory memory** is modality-specific and works in a similar way to the sensory buffer store in Broadbent's filter model of attention.
- The limited capacity of STM can be increased by **chunking**, which draws on LTM to encode new information in a meaningful way. **Rehearsal** is a way of holding information in STM almost indefinitely, and the primary code used by STM is **acoustic**. But semantic and visual coding are also used.

- LTM probably has an **unlimited capacity**, and information is stored in a **relatively permanent** way. Coding is mainly **semantic**, but information may also be coded visually, acoustically and in other ways.
- Atkinson and Shiffrin's **multi-store model** (MSM) sees sensory memory, STM and LTM as **permanent structural components** of the memory system. Rehearsal is a **control process**, which acts as a **buffer** between sensory memory and LTM, and helps the **transfer** of information to LTM.
- The **primacy effect** reflects recall from LTM, while the **recency effect** reflects recall from STM. Together they comprise the **serial position effect**.
- Studies of **brain-damaged, amnesic patients** appear to support the STM–LTM distinction. While STM continues to function fairly normally, certain aspects of LTM functioning are impaired.
- LTM isn't unitary, but comprises **semantic, episodic**, and **procedural memory**. **Autobiographical memory** and **flashbulb memories** are two kinds of episodic memory. An overlapping distinction is that between procedural and **declarative** memory/learning.
- Baddeley and Hitch's **working-memory** (WM) model rejected the MSM's view of STM as unitary. Instead, STM is seen as comprising a **central executive**, which controls the activities of the **phonological loop** (inner voice), and **visuospatial scratch pad** (inner eye).
- Craik and Watkins' distinction between **maintenance** and **elaborative rehearsal** implies that it's not the amount but the **kind** of rehearsal or processing that matters.
- According to Craik and Lockhart's **levels-of-processing** (LOP) model, memory is a **by-product of perceptual analysis**, such that STM and LTM are the consequences of the operation of control processes.
- The more deeply information is processed, the more likely it is to be retained. **Semantic processing** represents the **deepest** level. **Distinctiveness** is probably more important than **elaboration**.
- Both chunking and **imagery** are forms of organising information, making it easier both to store and to retrieve.
- The **hierarchical network model** of SM sees the memory network in terms of logical, hierarchical relationships between words and concepts. This has been modified to include **semantic distance** and **spreading activation**, making it more flexible and realistic.
- **Decay/trace decay theory** attempts to explain why forgetting increases over time. STM forgetting is due to disruption of the **active trace**, and **decay through disuse** explains LTM forgetting.
- **Displacement theory** is supported by data from Waugh and Norman's **serial probe task**. However, displacement may not be distinct from decay.
- According to **retrieval-failure theory**, memories cannot be recalled because the correct **retrieval cues** are missing. This is demonstrated by the **tip-of-the-tongue** (TOT) phenomenon, and the provision of **category names**. Unlike decay theory, retrieval-failure theory can explain our ability to recall different items on different occasions.
- **Cue-dependent forgetting** comprises **context-dependent** and **state-dependent** forgetting, which refer to **external** and **internal** cues respectively.
- According to **interference theory**, forgetting is influenced more by what we do before/after learning than by the mere passage of time. **Retroactive interference/inhibition** (RI) works **backwards** in time, while **proactive interference/inhibition** (PI) works **forwards** in time.
- Laboratory studies of interference lack **ecological validity**, and interference is more difficult to demonstrate when material other than nonsense syllables is used. Some types of LTM (such as episodic) are more vulnerable to interference effects than others (such as semantic).

Links with other topics/chapters

- Broadbent's *filter model of selective attention* was in many ways the precursor to Atkinson and Shiffrin's MSM, and sensory memory is very similar to Broadbent's concept of a sensory 'buffer' store (Chapter 13).
- The *case study* is a method that, in practice at least, often involves unusual or abnormal behaviour. While this can shed light on 'normal' behaviour, critics argue that we cannot generalise from such cases, making it *unscientific* (Chapter 3). Traditional science adopts a *nomothetic* ('law-like') approach, while the case study is central to the *idiographic* ('uniqueness') approach (Chapter 42). But these aren't necessarily mutually exclusive, as demonstrated by Freud's *psychoanalytic theory* (Chapters 2, 35, 36, 42, 45, 49 and 50). Rose (2003) argues that cases like those of H.M. and Clive Wearing involve brain damage that is clinically unique, making it impossible to generalise as can be done from patients with Korsakoff's syndrome or *Alzheimer's disease* (Chapter 39).
- The distinction between PM and declarative memory is similar to that between *controlled* and *automatic processing* (Chapter 13).
- Chess masters' phenomenal STM only for non-random board positions demonstrates an important difference between how people and *computers* 'think' and solve problems (Chapter 20).

Answers to questions on page 294

visuospatial scratchpad; articulatory loop; central executive

Language and thought are the same

Watson's 'peripheralist' approach

Thought is dependent on, or caused by, language

The linguistic relativity hypothesis (LRH)

What was Whorf's evidence?

Testing the LRH

Evaluation of the LRH

The LRH, social class and race

Social-class differences in language and thought

Black English

Language is dependent on, and reflects, thought

Thought and language as initially separate activities

Conclusions

Chapter summary

Links with other topics/chapters

18

LANGUAGE, THOUGHT AND CULTURE



INTRODUCTION AND OVERVIEW

The relationship between language and thought is one of the most fascinating and complex issues within psychology, and it's been debated by philosophers for over 2000 years. Our thinking often takes the form of imagery, and our thoughts and feelings are often expressed (unconsciously) through gestures and facial expressions. Artists 'think' non-linguistically. Knowing what we want to say, but being unable to 'put it into words', is one of several examples of thought taking place without language (Weiskrantz, 1988).

However, the exact relationship between language and thought has been the subject of much debate amongst philosophers and psychologists. Views fall into four main categories.

1. *Thought is dependent on, or caused by, language.* This view is taken by people working in a variety of disciplines, including psychology, sociology, linguistics and anthropology. Sapir (a linguist and anthropologist) and Whorf (a linguist) were both interested in comparing languages, which they saw as a major feature of a culture. Language is shared by all members of a culture, or sub-cultures within it, and this makes it a determining influence on how individuals think. Bernstein (a sociologist) focused on sub-cultural (social class) differences in language *codes*, which he saw as a major influence on intelligence and educational attainment. *Social constructionists* (e.g. Gergen) regard language as providing a basis for all our thought, a system of categories for dividing up experience and giving it meaning (see Chapter 2).
2. *Language is dependent on, and reflects, thought.* Probably the most extreme version of this view is Piaget's, according to whom language reflects the individual's level of cognitive development. Piaget's theory is discussed in detail in Chapter 34.
3. *Thought and language are initially quite separate activities,* which then come together and interact at a later point in development (about age two). This view is associated with the Russian psychologist, Vygotsky, whose developmental theory is also discussed in Chapter 34.
4. *Language and thought are one and the same.* This rather extreme view is associated mainly with Watson, the founder of behaviourism.

The focus of this chapter is the various versions of the first of these viewpoints.

LANGUAGE AND THOUGHT ARE THE SAME

Watson's 'peripheralist' approach

The earliest psychological theory of the relationship between language and thought was proposed by Watson (1913). In his view, thought processes are really no more than the sensations produced by tiny movements of the speech organs too small to produce audible sounds. Essentially, then, thought is talking to oneself very quietly. Part of Watson's rejection of 'mind' was his denial of mentalistic concepts such as 'thought' (see Chapter 3), and hence his reduction of it to 'silent speech' (see Chapter 49).

Watson's theory is called *peripheralism,* because it sees 'thinking' occurring peripherally in the larynx, rather than centrally in the brain. Movements of the larynx do occur when 'thought' is taking place. But this indicates only that such movements may *accompany* thinking, not that the movements *are* thoughts or that they're necessary for thinking to occur.

> *ASK YOURSELF...*
> - Can you think of any ways in which you might test Watson's theory?

Smith (*et al.*, 1947) attempted to test Watson's theory by giving himself an injection of curare, a drug that causes total paralysis of the skeletal muscles without affecting consciousness. The muscles of the speech organs and the respiratory system are paralysed, and so Smith had to be kept breathing artificially. When the drug's effects had worn off, he was able to report on his thoughts and perceptions during the paralysis.

Additionally, Furth (1966) has shown that people born deaf and mute, and who don't learn sign language, can also think in much the same way as hearing and speaking people. For Watson, deaf and mute individuals should be incapable of thought, because of the absence of movement in the speech organs.

THOUGHT IS DEPENDENT ON, OR CAUSED BY, LANGUAGE

Bruner (1983) has argued that language is essential if thought and knowledge aren't to be limited to what can be learned through our actions (the *enactive mode of representation*) or images (the *iconic mode*). If the *symbolic mode* (going beyond the immediate context) is to develop, then language is crucial (see Chapter 34).

Social constructionists (e.g. Gergen, 1973) have argued that our ways of understanding the world derive from other people (past and present), rather than from objective reality. We're born into a world where the conceptual frameworks and categories used by people in our culture already exist. Indeed, these frameworks and categories are an essential part of our culture, since they provide meaning, a way of structuring experience of both ourselves and the world of other people. Language is of fundamental importance in this process. This view has much in common with the 'strong' version of the *linguistic relativity hypothesis,* the most extensively researched of the theories arguing that thought is dependent on, or caused by, language.

> *ASK YOURSELF...*
> - What would you say are some of the fundamental categories that exist in contemporary Britain, taken-for-granted ways of thinking and perceiving, which we may/may not share with other western cultures?

The linguistic relativity hypothesis (LRH)

According to the philosopher Wittgenstein (1921), 'The limits of my language mean the limits of my world'. By

this he meant that people can only think about and understand the world through language, and that if a particular language doesn't possess certain ideas or concepts, these couldn't exist for its native speakers.

The view that language determines how we think about objects and events, or even what we think (our ideas, thoughts and perceptions), can be traced to the writings of Sapir (1929) and Whorf (1956), a student of Sapir. Their perspective is often called the *Sapir–Whorf linguistic relativity hypothesis* (LRH), and is sometimes referred to as the *Whorfian hypothesis* in acknowledgement of the greater contribution made by Whorf. For Whorf (1956):

> We dissect nature along the lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions that has to be organised by our minds – and this means largely by the linguistic systems in our minds. We cut nature up, organise it into concepts and ascribe significance as we do, largely because we are parties to an agreement to organise it this way – an agreement that holds throughout our speech community and is codified in patterns of our language.

According to Whorf's *linguistic determinism,* language determines our concepts, and we can think only through the use of concepts. So acquiring a language involves acquiring a 'world view' (or *Weltanschauung*). People who speak different languages have different world views (hence linguistic 'relativity').

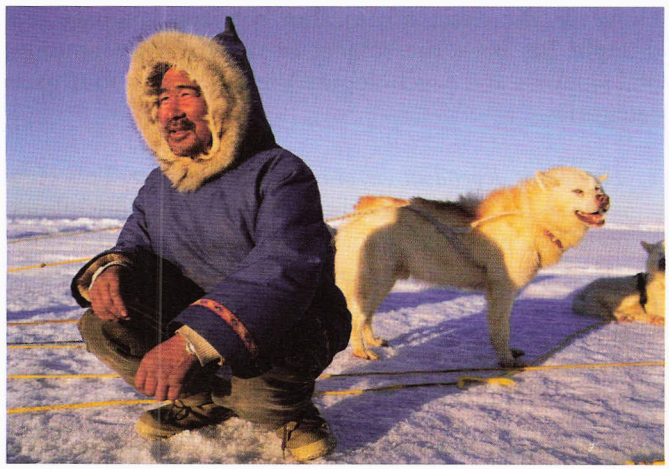
ASK YOURSELF...

- In a general sense, do you agree with the claims of linguistic determinism? Is language really that 'powerful'? Have another read of this chapter's *Introduction and overview.*
- If people who speak different (native) languages really do have different world views, what would that imply for communication between them?

What was Whorf's evidence?

Whorf compared standard average European (SAE) languages, such as English, French and Italian (Indo-European), with Native American languages, particularly Hopi. While in English we have a single word for snow, the Inuit Eskimos have approximately 20 (including one for fluffy snow, one for drifting snow, another for packed snow, and so on). The Hopi Indians have only one word for 'insect', 'aeroplane' and 'pilot' and the Zuni Indians don't distinguish, verbally, between yellow and orange.

Whorf also saw a language's grammar as determining an individual's thought and perception. In the Hopi language, for example, no distinction is made between past, present and future which, compared with English,



According to Whorf, the fact that Inuit Eskimos have 20 different words for snow means that they literally perceive more varieties of snow than native English speakers who have only one or two words

makes it a 'timeless language'. In European languages, 'time' is treated as an objective entity, with a clear demarcation between past, present and future. Although the Hopi language recognises duration, Hopis talk about time only as it appears subjectively to the observer. For example, rather than saying 'I stayed for ten days', Hopis say 'I stayed until the tenth day' or 'I left on the tenth day'.

In English, nouns denote objects and events, and verbs denote actions. But in the Hopi language, 'lightning', 'wave', 'flame', 'meteor', 'puff of smoke' and 'pulsation' are all verbs, since events of necessarily brief duration must be verbs. As a result, a Hopi would say 'it lightninged', 'it smoked' and 'it flamed'.

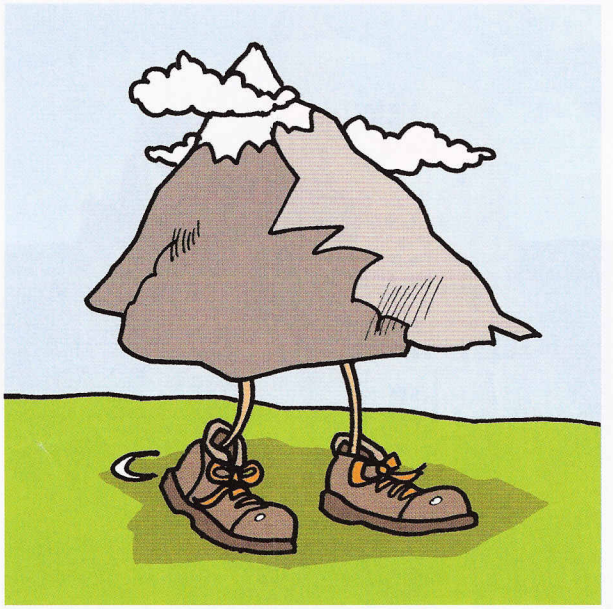
ASK YOURSELF...

- Does the finding that Inuit Eskimos have 20 words for snow (if true) necessarily mean that native speakers of Inuit actually *perceive* more varieties of snow than speakers of English?
- Did Whorf show that the Hopi Indians cannot discriminate between past, present and future in essentially the same way as SAE speakers?

Greene (1975) asks us to imagine a Hopi linguist applying a Whorfian analysis to English. Would s/he think that we have 'primitive' beliefs that ships are really female or that mountains have feet, or that 'driving a car', 'driving off in golf' and 'driving a hard bargain' all involve the same activity? Of course not. (See 'Evaluation of the LRH', pages 312–313.)

Testing the LRH

Miller & McNeill (1969) distinguish between three different versions of the LRH, all of which are consistent with it but vary in the strength of claim they make:



Do mountains really have feet?

- the *strong* version claims that *language determines thought*
- the *weak* version claims that *language affects perception*
- the *weakest* version claims that *language influences memory* – information that's more easily described in a particular language will be better remembered than information that's more difficult to describe.

The questions and criticisms that we considered above relate mainly to the strong version, But almost all the research has focused on the weak and weakest versions. One of the few attempts to test the strong version was a study by Carroll & Casagrande (1958).

KEY STUDY 18.1 How Navaho children shape up on cognitive development (Carroll & Casagrande, 1958)

- Carroll and Casagrande compared Navaho Indian children who spoke only either Navaho (*Navaho–Navaho*) or English and Navaho (*English–Navaho*) with American children of European descent who spoke *only English*.
- The children were tested on the development of form or shape recognition.
- The Navaho language stresses the importance of form, such that 'handling' verbs involve different words depending on what's being handled. For example, long and flexible objects (such as string) have one word form, whereas long and rigid objects (such as sticks) have another.
- American children of European descent develop object recognition in the order: size, colour, and form or shape.
- If, as the strong version of the LRH claims, language influences cognitive development, then the developmental sequence of the Navaho children should differ from the English-only American children, and their form or shape recognition abilities should be superior.
- This is what Carroll and Casagrande found, thus supporting the strong version of the LRH.
- However, they also found that the *English–Navaho* group showed form recognition *later* than the English-only American children, which doesn't support the LRH strong version.
- Carroll and Casagrande attributed the superior performance of the English-only children to the fact that they'd had a great deal of experience of shape classification at nursery school. This made them an atypical sample.

Attempts at testing the 'weak' and 'weakest' versions of the LRH have typically involved the *perception and memory of colour.* The Jalé (New Guinea) only have terms for black and white, while the Dani (New Guinea) use 'mola' for bright, warm hues, and 'mili' for dark, cold hues. The Shona people (Zimbabwe) have three colour words, and members of the Ibibio culture (Nigeria) have terms for black, white, red and green.

ASK YOURSELF...

- Would the Jalé or the Ibibio find tests of colour perception and memory more difficult, according to the weak and weakest versions of the LRH?

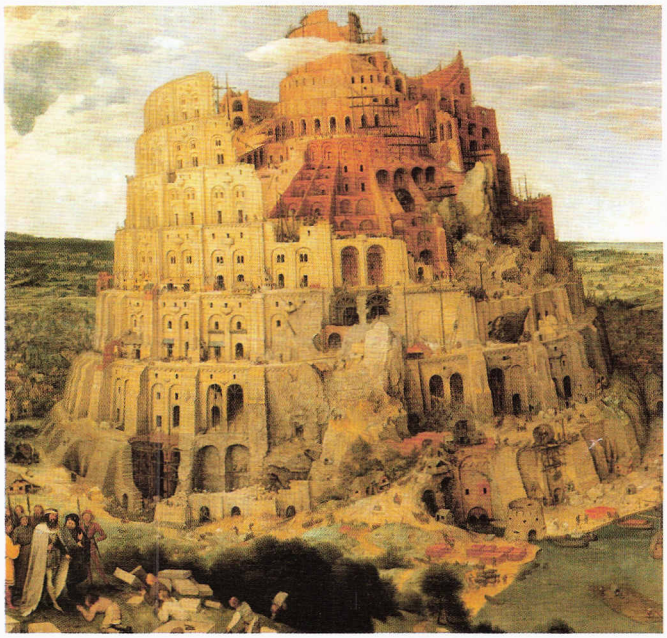
According to the weaker versions of the LRH, tests of colour perception and memory should be more difficult for the Jalé than the Ibibio. Since the Ibibio word for green encompasses the English green, blue and yellow, the Ibibio should find colour perception and memory tasks more difficult than English speakers. Taking a previous example, since the Zuni language doesn't distinguish between yellow and orange, Zuni speakers should be unable to discriminate them (they should be 'blind' for these two colours).

Brown & Lenneberg (1954) found that Zuni Indians *did* make more mistakes than English speakers in recognising these colours. But Lenneberg & Roberts (1956) found that the number of errors made by *bilingual* Zuni–English speakers in distinguishing orange and yellow fell *midway* between that of monolingual Zuni and monolingual English speakers. This suggests that the two languages don't determine two different sets of conflicting perceptions, but rather two sets of *labels* for essentially the same colour perceptions. Language serves to draw attention to differences in the environment and acts as a label to help store these differences in memory. Sometimes the label we apply to what we see may *distort* our recall of what was seen, since the label determines how we code our experiences into memory storage (see Chapter 17).

KEY STUDY 18.2 Drawing different conclusions (Carmichael *et al.*, 1932)

- Two separate groups of participants were given identical stimulus figures, but two different sets of labels.
- After a period of time, both groups were asked to reproduce the figures.
- The drawings of both groups were distorted in comparison with the original stimulus according to which label had been presented. (See Figure 18.1.)

So, while there's very little direct evidence to support the strong form of the LRH, there's rather more support for the weaker versions. Language merely predisposes people to think or perceive in certain ways or about certain things (Brown, 1958). However, Brown & Lenneberg's (1954) results (and those of other researchers using a similar methodology) have been challenged in a way that throws doubt even on the weaker versions.



The *Tower of Babel* by Breughel. From the Old Testament story of Babel, the word 'babble' is derived

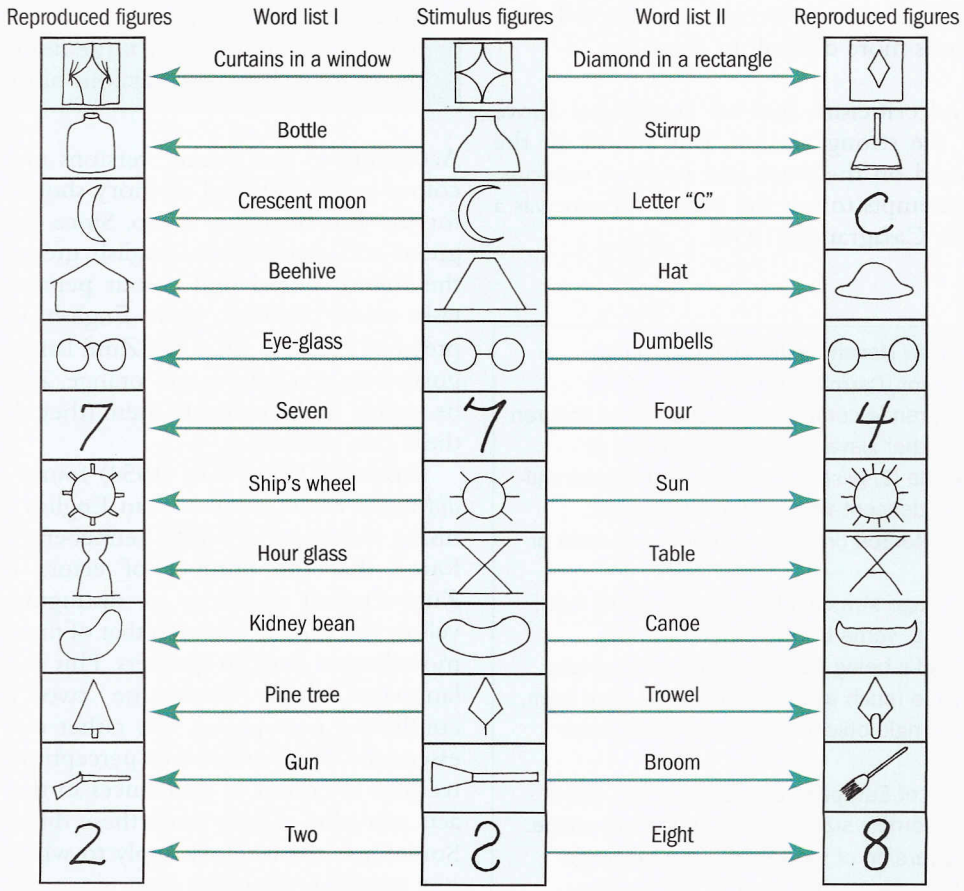


Figure 18.1 Stimulus figures, word lists and reproduced figures (from the experiment by Carmichael *et al.*, 1932)

Perceiving focal colours

Berlin & Kay (1969) used a chart with an array of 329 small coloured chips, comprising virtually all the hues that the human eye can discriminate. They asked native speakers of 20 languages (other than English) (a) to trace the boundaries of each of their native language's basic colour terms, and (b) to point to the chip which was the best example of each basic colour term. A basic or focal colour was defined by a list of linguistic criteria, including:

- a term should consist of only a single unit of meaning (e.g. 'red' as opposed to 'dark red'), and
- it should name only colours and not objects (e.g. 'purple' as opposed to 'wine').

As expected from anthropological research, there was considerable variation in the placement of boundaries. But the choice of best examples was surprisingly similar. The largest clusters were for black and white and red, for which all the 20 languages have colour terms, then 19 for green, 18 yellow, 16 blue, 15 brown and purple, 14 grey, and 11 pink and orange. Berlin and Kay concluded that 'colour categorisation is not random and the foci of basic colour terms are similar in all languages'.

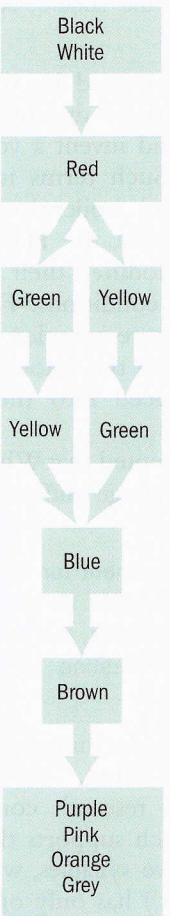


Figure 18.2 The sequence in which focal colours emerge (Berlin & Kay, 1969)

So, while cultures may differ in the number of basic colour terms they use, all cultures draw their focal terms from only 11 colours: black, white, red, green, yellow, blue, brown, purple, pink, orange and grey. Moreover, the colour terms emerge in a particular sequence in the history of languages.

For cultures with only two colours, these will always be black and white, whereas in cultures with three colours, these will always be black, white and red (Newstead, 1995). As Newstead has observed:

> This, then, gives a rather different perspective on the use of colour terms. It had been assumed that verbal labels were chosen more or less arbitrarily, and that those chosen influenced the way in which colour was perceived. Berlin and Kay's findings suggest that there are certain focal colours which will always be labelled if colour terms are used at all. This suggests an alternative explanation for Brown and Lenneberg's findings: that the colours which participants in their study had found easier to learn were the focal colours and these were easy to remember not because they had verbal labels but because they were the most basic colours.

A study which supports Berlin and Kay's findings was conducted by Heider & Oliver (1972).

KEY STUDY 18.3 Colour naming among the Dani (Heider & Oliver, 1972)

- As we noted earlier, the Dani (a Stone-Age agricultural people of Indonesian New Guinea) have only two words for colours, whereas native English speakers have words for 11 basic colours.
- Heider and Oliver gave both Dani and English-speaking participants a coloured chip which they were allowed to look at for five seconds. After a 30-second delay, participants were asked to pick out a chip of the same colour among a set of 40 different-coloured chips.
- On the *weakest* version of the LRH, the Dani's colour vocabulary should have influenced their memory for colours, and on the *weak* version they should have had difficulty discriminating similar colours of a slightly different hue that they'd labelled with the same name.
- Both the Dani-speaking and English-speaking participants made many mistakes. But there were *no* significant differences between them in their rate of confusion of similar colours, despite the differences in their colour vocabularies.
- In other research, Heider showed that both Dani and English speakers were better at recognising focal colours than non-focal colours, and that the Dani found it much easier to learn labels for focal than non-focal colours.

Heider (1972) concluded that:

> Far from being a domain well suited to the study of the effects of language on thought, the colour-space would seem a prime

example of the influence of underlying perceptual–cognitive factors on the formation and reference of linguistic categories.

By this, Heider (sometimes referred to as Rosch – her married name) means that her data are better explained in terms of physiological factors underlying colour vision, rather than linguistic factors. Thus, people are sensitive to focal colours because the human visual system processes reality in a certain way (Lakoff, 1987). Indeed, evidence suggests that focal colours can be discriminated before any verbal labels for them have been learned. Bornstein (1988), for example, has argued that preverbal infants categorise the visible spectrum in a similar way to adults, namely, on the basis of the relatively discrete hues of blue, green, yellow and red.

However, Kay (in Ross, 2004) denies that there's any evidence to support a physiological explanation. In addition, a study of another New Guinea people, the Berinmo, casts doubt on Heider's interpretation, and seems to support the weakest and weak versions of the LRH.

KEY STUDY 18.4 Colour naming among the Berinmo

- Robertson *et al.* (cited in Hanlon, 1999b) studied the Berinmo people of New Guinea, who live a simple hunter-gatherer lifestyle in remote forests.
- They have five colour names: one for green, blue and purple, another for yellow, orange and brown, a third for all dark colours, a fourth for white and all light colours; and a fifth for all shades of red and pink.
- Using a procedure similar to Heider & Oliver's (1972), Robertson *et al.* found that the Berinmo could remember only those colours which matched their colour names, and that they were unable to discriminate between colours which their language didn't discriminate (for example, green and blue).
- Although all the focal colours were 'represented' by the Berinmos' five colour names, the fact that green, blue and purple were lumped together, as were yellow, orange and brown, and also red and pink, seems inconsistent with the claim that colour terms emerge in a particular order in the history of languages (see Figure 18.2):

While it has been assumed that a lot of low-level things like colour perception have taken place at a low, almost a genetic level, we found that even something as simple as colour is affected by culture. (Robertson, cited in Hanlon, 1999b)

Evaluation of the LRH

- Berry *et al.* (1992) and Jackendoff (1993) have argued that Whorf's evidence was anecdotal rather than empirical, and that he exaggerated the differences between Hopi and other languages. Moreover, far from having 'over 20' words for 'snow', the Inuit Eskimos have relatively few such words (Newstead, 1995), and no more than do English speakers (Pinker, 1997a). According to Pagel (1995), Whorf simply got his facts wrong.
- There's an important difference between a language's grammar and our perceptual experience. The fact that Hopi can be translated into English (and vice versa) implies a universally shared knowledge of the world that's independent of the particular language in which it's expressed (Pagel, 1995).
- A crucial question that Whorf seems to have overlooked is *why* Eskimos have so many names for snow (if, indeed, they do) and SAE languages so few. One answer is that the more significant an experience or some feature of our environment is for us, the greater the number of ways of expressing it in the language. In other words, while Whorf argued that language structures the Eskimo's world, it could equally well be argued that the Eskimo's language develops *as a result of* his/her different perception of the world (Baddeley, 1999). According to Solso (1995):

  The development of specific language codes ... is dependent on cultural needs; the learning of these codes by members of a language group also involves the learning of significant values of the culture, some of which must be related to survival ...

- Solso's view is supported by the fact that English-speaking skiers learn to discriminate between varied snow conditions and invent a vocabulary to describe these differences. Such terms include 'sticky snow', 'powder', 'corn' and 'boilerplate' (or ice: Crooks & Stein, 1991). Similarly, the Hanunoo people of the Philippines have modified their language in response to environmental conditions. For example, women have developed a more complex vocabulary for shades of blue to distinguish the colours of dyed textiles that have been introduced into their society (Price & Crapo, 1999).
- It's now widely accepted that Whorf overestimated the importance of language differences. As Berry *et al.* (1992) have observed:

  Language as an instrument for thinking has many cross-culturally variant properties. As humans, we may not all be sharing the same thoughts, but our respective languages do not seem to predestine us to different kinds of thinking.

- What language may do, though, is to affect the ease of information processing. Newstead (1995), for example, describes research conducted by Hunt & Agnoli (1991) which supports this view. The English word 'seven' has two syllables, whereas the equivalent French word ('sept') has only one. The English word 'eleven' has three syllables, whereas the French word 'onze' has one. Hunt and Agnoli argue that when a name is shorter, information is processed more

quickly, and so French speakers would have an advantage over English speakers when performing mental arithmetic involving these numbers, at least in processing terms.

- According to Price & Crapo (1999), the study of semantic domains (such as colour naming) helps us to discover what's important in the daily lives of different cultural groups, as well as the changing cultural history of a society. Similarly, Kay (in Ross, 2004) argues that the degree to which the world is *man-made* seems to explain the variation in the number of colour words. Hunter-gatherers need fewer, because colour data rarely provide much crucially distinguishing information about a natural scene or object. But industrialised societies get a bigger 'information pay-off' for colour words.
- Kay (in Ross, 2004) claims that his research into focal colours has been interpreted by some as undermining the LRH as a whole. But he and Berlin were concerned with one restricted domain, namely colour. Even if it's accepted that the colour perception research doesn't support the LRH, there's no reason to rule it out in relation to other domains.

KEY STUDY 18.5 'There's a fly to the north of your nose'

- Ross (2004) cites a study of speakers of Guugu Yimithirr (a language of Australia). Like several world languages, this lacks subjective terms equivalent to 'left' and 'right', and instead uses absolute directions akin to 'north' and 'south'. In such a language, you might say 'There's a fly to the north of your nose.'
- If Guugu speakers are presented with an arrow pointing to their *left*, they'll later draw it pointing to the left only if they're still facing in the direction in which they saw the arrow originally.
- But if they turn round, they'll draw it pointing to the *right* – that is, in the same *absolute* direction as the original arrow.
- This illustrates quite strikingly how linguistic categories can mould thought and behaviour (Ross, 2004).

While this shows that the LRH may be correct:

> ... it is unlikely that the various languages of the world are so different from one another, in underlying conceptual structure, that the ways their speakers think are incommensurable ... (Kay, in Ross, 2004)

The LRH, social class and race

Social-class differences in language and thought

Stones (1971) gives examples of imaginary conversations on a bus between a mother and child:

1

Mother: Hold on tight.
Child: Why?
Mother: Hold on tight.
Child: Why?
Mother: You'll fall.
Child: Why?
Mother: I told you to hold on tight, didn't I?

2

Mother: Hold on tight, darling.
Child: Why?
Mother: If you don't you'll be thrown forward and you'll fall.
Child: Why?
Mother: Because if the bus suddenly stops, you'll jerk forward on to the seat in front.
Child: Why?
Mother: Now, darling, hold on tightly and don't make such a fuss.

ASK YOURSELF...

- How would you characterise the differences between these two conversations?

Restricted and elaborated codes

Bernstein (1961) was interested in language's role as a social (rather than individual) phenomenon, especially its relation to cultural deprivation. He showed that there were generally no differences between the verbal and non-verbal intelligence test performance of boys from public schools, and boys from lower-working-class homes. But the latter often showed considerable inconsistencies, with non-verbal performance sometimes being as much as 26 points better than verbal performance. Bernstein argued that working- and middle-class children speak two different kinds (or *codes*) of language, which he called *restricted* code and *elaborated* code respectively (see Table 18.1).

Bernstein saw the relationship between potential and actual intelligence as being mediated through language; consequently, the lack of an elaborated code would prevent working-class children from developing their full intellectual potential. The different language codes underlie the whole pattern of relationships (to objects and people) experienced by members of different classes, as well as the patterns of learning which their children bring with them to school.

In support of Bernstein's views, Hess & Shipman (1965) found that social-class differences influence children's intellectual development. In particular, there was a lack of meaning in the mother–child communication system for low-status families. Language was used much less to convey *meaning* (to describe, explain, express and so on), and much more to give orders and commands to

Table 18.1 Characteristics of restricted and elaborated codes (Bernstein, 1961)

	Restricted code		Elaborated code
1	Grammatically crude, repetitive and rigid, limited use of adjectives and adverbs, greater use of pronouns than nouns. Sentences often short, grammatically simple and incomplete	1	Grammatically more complex and flexible. Uses a range of subordinate clauses, conjunctions, prepositions, adjectives and adverbs. Uses more nouns than pronouns. Sentences are longer and more complex
2	Context-bound: the meaning isn't made explicit but assumes the listener's familiarity with the situation being described, e.g. 'He gave me it'; listener cannot be expected to know what 'he' or 'it' refers to	2	Context-independent: the meaning is made explicit, e.g.'John gave me this book'
3	'I' very rarely used; much of the meaning conveyed non-verbally	3	'I' often used, making clear the speaker's intentions, as well as emphasising the precise description of experiences and feelings
4	Frequent use of uninformative but emotionally reinforcing phrases, such as 'you know', 'don't I'	4	Relatively little use of emotionally reinforcing phrases
5	Tends to stress the present, the here-and-now	5	Tends to stress the past and future
6	Doesn't allow expression of abstract/hypothetical thought	6	Allows expression of abstract/hypothetical thought



The mother's description of pictures illustrates the use of meaning in the mother–child communication, as opposed to using language to give orders or commands

the child (see the two mother–child conversations above).

However, instead of seeing 'restricted' and 'elaborated' as distinct types of language code, they're better thought of as two ends of a continuum. Also, the terms 'restricted' and 'elaborated' imply a value judgement of middle-class speech as being superior to working-class speech (closer to 'standard' or 'the Queen's' English). The lack of objectivity makes this judgement difficult to defend.

Black English

A version of English spoken by segments of the African-American community is called 'Black English'. For example, when asked to repeat the sentence 'I asked him if he did it, and he said he didn't do it', one five-year-old girl repeated the sentence like this: 'I asks him if he did it, and he says he didn't did it, but I knows he did' (Labov, 1973). Bernstein argued that Black English is a restricted code, and that this makes the thinking of Black English speakers less logical than that of their white elaborated-code counterparts.

One major difference between Black and standard English relates to the use of verbs (Rebok, 1987). In particular, Black English speakers often omit the present tense copula (the verb 'to be'). So, 'he be gone' indicates standard English 'he's been gone for a long time' and 'he gone' signifies that 'he's just gone'. Black English is often termed *sub-standard* and regarded as illogical rather than *non-standard* (Bereiter & Engelman, 1966). According to Labov (1970), Black English is just one dialect of English, and speakers of both dialects are expressing the same ideas equally well.

Black English and prejudice

While the grammatical rules of Black English differ from those of standard English, Black English possesses consistent rules which allow the expression of thoughts as complex as those permitted by standard English (Labov, 1973). Several other languages, such as Russian and Arabic, also omit the present-tense verb 'to be', and yet we don't call them 'illogical'. This suggests that black dialects are considered sub-standard as a matter of convention or prejudice, and not because they're poorer vehicles for expressing meaning and logical thinking. However, because the structure of Black English does differ in important ways from standard English, and since intelligence tests are written in standard English, Black English speakers are at a linguistic disadvantage (as, indeed, are white working-class children: see Chapters 41 and 47).

Language in context

Labov also showed that the social situation can be a powerful determinant of verbal behaviour. A young boy called Leon was shown a toy by a white interviewer and asked to tell him everything he could about it. Leon said very little and was silent for much of the time, even when a black interviewer took over. However, when Leon sat on the floor and shared a packet of crisps with his best friend and with the same black interviewer introducing topics in a local black dialect, Leon became a lively conversationalist. Had he been assessed with the white or black interviewers on their own, Leon might have been labelled 'non-verbal' or 'linguistically retarded'.

Black children may actually be *bilingual*. In their home environments, the school playground and their neighbourhoods, they speak the accepted vernacular. In the classroom, however, and when talking to anyone in authority, they must adopt standard English with which they're unfamiliar. This results in short sentences, simple grammar and strange intonation. But out of school, their natural language is easy, fluent, creative and often gifted. So, while Black English is certainly *non-standard,* it's another language with its own grammar which is certainly *not* sub-standard.

CRITICAL DISCUSSION 18.1 'Ebonics': an ongoing debate

- Ebonics is a fusion of the words 'ebony' and 'phonics' and was coined in 1975 as an alternative to the term 'Black English'. In 1996, Ebonics (or African-American Vernacular English/AAVE) was officially recognised by the Oakland public school board in California, and schools were ordered to teach 28,000 black children in their own 'tongue'. The board claimed that Ebonics was a separate language, genetically rooted in the West-African and Niger–Congo language system, rather than a dialect of standard American English (Hiscock, 1996; Whittell, 1996).
- In early 1997, the school board edited its statement so that the word 'genetically' referred to linguists' use of the word for the roots of a language rather than to a gene pool. They also indicated that it wasn't the intent to teach in Ebonics, but rather to have teachers use the vernacular to be able to understand their children (Zinberg, 1997).
- Both conservatives and liberals in America claim that the decision to require Ebonics to be taught would be 'political correctness run amok' (Cornwell, 1997).
- Educationalists such as Zinberg disagree. In her view, many students are:

  ... bewildered, then angered and finally alienated from the schools where their language and self-esteem are belittled by a seemingly insensitive system.

- Although regional dialects in the USA are diverging, there's no evidence of convergence between black and white vernaculars (Hawkes, 1998).
- By contrast, British blacks and whites still speak the same language, partly because there's no segregation in housing in Britain as there is in the USA (Labov, in Hawkes, 1998).

LANGUAGE IS DEPENDENT ON, AND REFLECTS, THOUGHT

According to Piaget (1950), children begin life with some understanding of the world and try to find linguistic ways of expressing their knowledge. As language develops, it 'maps' onto previously acquired cognitive structures, and so language is dependent upon thought (Piaget & Inhelder, 1969). For example, a child should begin talking about objects that aren't present in its immediate surroundings only after *object permanence* has developed (see Box 19.4, page 324). Similarly, children who could *conserve* liquid quantity (see Chapter 34, page 586) understood the meaning of phrases and words such as 'as much as', 'bigger' and 'more'. However, children who couldn't conserve didn't improve their performance of the correct use of these words after receiving linguistic training (Sinclair-de-Zwart, 1969).

In Piaget's view, children can be taught words, but they won't understand them until they've mastered certain intellectual skills during the process of cognitive growth. So, language can exist without thought, but only in the sense that a parrot can 'speak'. Thought, then, is a necessary forerunner to language if language is to be used properly.

Contrary to Piaget's view that thought structures language, Luria & Yudovich (1971) suggest that language plays a central role in cognitive development.

CASE STUDY 18.1: The Russian twins (Luria & Yudovich, 1971)

- Luria and Yudovich studied five-year-old twin boys whose home environment was unstimulating. They played almost exclusively together and had only a very primitive level of speech. The boys received little adult encouragement to speak, and made little progress towards the symbolic use of words. Essentially, their speech was *synpraxic,* a primitive form in which words cannot be detached from the action or object they denote.
- The twins hardly ever used speech to describe objects or events or to help them plan their actions. They couldn't understand other people's speech, and their own constituted a kind of *signalling* rather than symbolic system.
- Although they never played with other children, and played with each other in a primitive and repetitive way, they were otherwise normal.

- After being separated, one twin was given special remedial treatment for his language deficiency, but the other wasn't. The former made rapid progress and, ten months later, was ahead of his brother. However, both made progress, and their synpraxic speech died away. For Luria and Yudovich:

  The whole structure of the mental life of both twins was simultaneously and sharply changed. Once they acquired an objective language system, [they] were able to formulate the aims of their activity verbally, and after only three months we observed the beginnings of meaningful play.

THOUGHT AND LANGUAGE AS INITIALLY SEPARATE ACTIVITIES

For Vygotsky (1981), language is by far the most important psychological tool the human species possesses, capable of transforming how we think about the world and altering 'the entire flow and structure of mental functions'. So, while for Piaget thought is prior to language (the development of representational thinking enables the child to use words), Vygotsky sees language as prior to thought (developing the ability to use words makes representational thought possible) (Schaffer, 2004).

According to Vygotsky (1962), language and thought begin as separate and independent activities. Early on, thinking occurs without language (consisting primarily of images) and language occurs without thought (as when babies cry or make other sounds to express feelings, attract attention or fulfil some other social aim). But at about age two, *prelinguistic thought* and *pre-intellectual language:*

... meet and join to initiate a new kind of behaviour [in which] thought becomes verbal and speech rational. (Vygotsky, 1962)

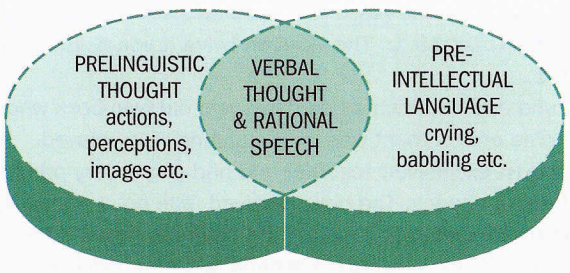


Figure 18.3 A diagrammatic representation of Vygotsky's views on the relationship between language and thought

Vygotsky believed that between ages two and seven, language performs two functions:

1. an *internal* function, which enables internal thought to be monitored and directed
2. an *external* function, which enables the results of thinking to be communicated to others.

However, children cannot yet distinguish between the two functions and, as a result, their speech is *egocentric:* they talk out loud about their plans and actions, and can neither think privately nor communicate publicly to others. Instead, they're caught somewhere between the two, and cannot distinguish between 'speech for self' (what Piaget calls *autistic speech*) and 'speech for others' (*socialised speech*).

Vygotsky believed that around age seven (when children typically enter Piaget's *concrete operational stage* of cognitive development: see Chapter 34), overt language begins to be restricted to communication, while the thought function of language becomes internalised as *internal speech* (*verbal thought*). For Piaget, egocentric speech is a kind of 'running commentary' on the child's behaviour. At about age seven, it simply fades away and is replaced by socialised (or communicative) speech.

Box 18.1 The function of egocentric speech

- When six- or seven-year-olds are trying to solve a problem and something goes wrong (such as a pencil breaking) which requires them to revise their thinking, they often revert to overt verbalisation (Vygotsky, 1962).
- Adults sometimes do the same in similar situations, especially when they believe no one can hear them. For example, we'll often retrace our steps out loud (such as 'Now, I know I didn't have it when I went in the room, so what did I do before that?').
- Vygotsky concluded that the function of egocentric speech was similar to that of inner speech. It doesn't merely accompany the child's activity but:

  ... serves mental orientation, conscious understanding; it helps in overcoming difficulties, it is speech for oneself, intimately and usefully connected with the child's thinking. In the end it becomes inner speech ... [see Figure 18.4]

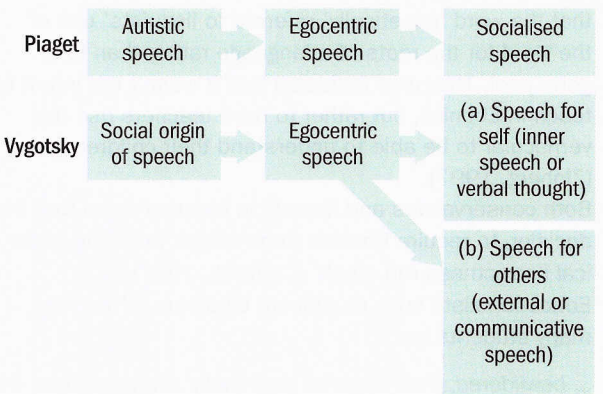


Figure 18.4 The difference between Piaget and Vygotsky with respect to egocentric speech

An evaluation of Vygotsky's position

- A considerable body of research into inner speech has largely supported Vygotsky's account, demonstrating how closely language and thought become intertwined during development (Schaffer, 2004).
- Egocentric speech commonly accompanies problem-solving, even in young children. But with age, it becomes less and less audible, and eventually becomes silent.
- For example, Bivens & Berk (1990) observed six- to seven-year-olds as they worked on maths problems. This was repeated one to two years later. The overall incidence of egocentric speech was extremely high and remained high over the three years of observation. But task-relevant speech increased greatly, and the *nature* of the speech changed – there was more inaudible muttering and lip movements. These changes were paralleled by the children's greater ability to inhibit extraneous movements and restlessness, and to pay closer attention to the task. This is consistent with Vygotsky's belief that inner speech is used increasingly to aid the child's *self-regulation/self-control* (Schaffer, 2004).

Box 18.2 Language and self-regulation

According to Luria (1961), a colleague and supporter of Vygotsky, there are three stages in children's ability to use language for directing their behaviour.

1. Up to about three, another person's verbal instructions can trigger an action, but not inhibit it. For example, given a rubber bulb to squeeze, children will correctly squeeze in response to 'Squeeze', but 'Stop' will simply make them squeeze again.
2. Between four and five, they respond to instructions in an impulsive way: told to squeeze when a light comes on, they'll squeeze repeatedly. They're responding more to the energising quality of speech than to its content (the louder the instructions, the more often they squeeze).
3. After about five, they respond to the contents of speech and become capable of using it to inhibit or activate their behaviour.

- Both inner speech and egocentric speech differ from speech for others in that they don't have to satisfy grammatical conventions. Thus, both are abbreviated, incomplete and concerned more with the essential meaning rather than how it's expressed. For Vygotsky, inner speech is a 'dynamic, shifting and unstable thing which "flutters" between word and thought' (see Figure 18.3).
- Overt speech can sometimes resemble inner speech in its abbreviated nature, long after egocentric speech has been replaced. For example, people who know each other well may talk in an abbreviated form that wouldn't be used with strangers. Understanding occurs because the more familiar we are with others, and the more experiences we have in common, the less explicit our speech has to be. 'Coffee?', for example, asked with a rising inflection and in a particular context, would be interpreted as 'Would you like a cup of coffee?' This is similar to how adults interpret the holophrastic speech of young children (see Box 19.2, page 323). In Bernstein's terms, we use restricted code when talking in familiar surroundings to familiar others, whose view of the world we assume is similar to our own.

CONCLUSIONS

While there are many examples indicating that thought can occur without language, the exact relationship between thought and language remains unclear. What is certain, however, is that no one account of this relationship is true and all others false; several theoretical perspectives can claim some support from the experimental literature. However, since language represents such a central feature of culture, both shaping it and being shaped by it, any theory which fails to take account of cultural factors is likely to be inadequate.

CHAPTER SUMMARY

- According to Watson's **peripheralism**, thought is no more than sensations produced by tiny movements of the larynx, too small to produce audible sounds. While these movements accompany thought, they're not necessary for thinking to occur.
- Contrary to Watson's view, thinking can occur despite complete paralysis, and people born deaf and mute are also capable of thinking.
- Bruner argues that language is essential for thought and knowledge to progress beyond the **enactive** and **iconic modes of representation** to the **symbolic mode**.
- **Social constructionists** claim that conceptual frameworks and categories provide meaning within a culture, a way of structuring our experience of ourselves and the world.
- According to the **Sapir–Whorf linguistic relativity hypothesis** (LRH), language determines how we think about objects and events, and even what we think. This is related to **linguistic determinism**.
- The '**weak**' and '**weakest**' versions of the LRH have typically been tested through perception and memory of **colour**. The fewer colour words there are in a language, the more difficult native speakers should find tests of colour perception and memory.
- Early studies seemed to support these two versions. But while cultures may differ in the number of basic colour terms they use, all cultures draw their colour terms from only eleven **focal colours**, which emerge in a particular sequence in the history of languages.

- Whorf's evidence was anecdotal rather than empirical, and he exaggerated the differences between Hopi and other languages. Also, he mistakenly equated language's grammar with perceptual experience. Translation between languages implies a universally shared knowledge of the world independent of any particular language.
- Bernstein claimed that working-class children speak a **restricted code** and middle class children an **elaborated code**. The relationship between actual and potential intelligence is mediated through language, so working-class children are prevented from developing their full intellectual potential.
- Differences between standard and **Black English** have resulted in the latter being called **sub-standard**, rather than **non-standard**. According to Labov, this is an expression of prejudice.
- Black children may be **bilingual**, using the accepted register fluently at home and with their peers, but adopting unfamiliar standard English in the classroom.
- According to Piaget, language 'maps' on to previously acquired cognitive structures, so that **language is dependent on thought**. Words can be understood only if certain intellectual skills (such as **object permanence** and **conservation**) have already been mastered.
- For Vygotsky, **language and thought are initially separate and independent** activities. At around age two, **pre-linguistic thought** and **pre-intellectual language** begin to interact to form **verbal thought** and **rational speech**.
- Between the ages of two and seven, language performs both internal and external functions. The child's failure to distinguish between them results in **egocentric speech**. For Vygotsky, this indicates the separation of the two functions.
- According to both Vygotsky and Luria, language plays a vital role in **self-regulation/self-control**.

Links with other topics/chapters

- Watson's peripheralism demonstrates both his *behaviourist* rejection of mentalistic terms (Chapters 2 and 3), and the *reductionist* approach of behaviourism (Chapter 49).
- *Social constructionism* (SC) is a theoretical orientation that lies behind a number of recent alternative approaches to the study of human beings as social animals, including *critical psychology, discourse analysis* and *feminist psychology* (Chapters 2, 3 and 47).
- The weak version of the LRH claims that language affects *perception* (Chapter 15), while the weakest version claims that language influences *memory* (Chapter 17).
- Regarding Black English as sub-standard (rather than non-standard) is an expression of *prejudice* (Chapter 25).
- Since standard *intelligence (IQ) tests* are written in standard English, Black English speakers are at a linguistic disadvantage, as are white working-class children (Chapters 41 and 47).
- Bruner's, Piaget's and Vygotsky's accounts of the relationship between language and thought are part of their more general theories of *cognitive development* (Chapter 34).

What is language?
The major components of grammar
Phonology
Semantics
Syntax
Stages in language development
The prelinguistic stage (0–12 months)
One-word stage
Stage of two-word sentences
Stage 1 grammar (18–30 months)
Stage 2 grammar (from about 30 months)
Theories of language development
Learning theory: operant conditioning
An evaluation of Skinner's theory
Chomsky's LAD and the biological approach
Is there a critical period for language?
An evaluation of Chomsky's theory
Some alternatives to learning theory and biological approaches
The language and social-interaction approach
LASS: the active adult
The active child
Teaching language to non-human animals
Criteria for language
Early studies
Evaluating production-based studies
Helping chimps be more like children
Is language uniquely human?
Conclusions
Chapter summary
Links with other topics/chapters

19

LANGUAGE ACQUISITION



INTRODUCTION AND OVERVIEW

Since our brains seem specially designed to enable us to use speech (see Chapter 4), it's hardly surprising that language is so crucial to most human activities. Many psychologists and philosophers have claimed that language is what makes us unique as a species.

Until quite recently, the study of language was largely the domain of linguistics, which is concerned primarily with the structure of language (its grammar). According to Durkin (1995), while developmental psychologists have always been interested in language, during the mid-twentieth century it became marginalised as an area of psychological research. As we noted in Chapter 18, Piaget saw language as merely reflecting cognitive structures – a lens through which to inspect the child's thought. This seemed to reinforce the behaviourists' earlier rejection of anything 'mental' (such as grammar and meaning).

However, there's been a revival of interest in language since the 1960s, inspired largely by Chomsky's (1959) theory of an innate *language acquisition device* (LAD). This is probably the most extreme *nativist* theory in the whole of psychology (see Chapter 50). The 'marriage' between psychology and linguistics (Chomsky is a linguist) is called *psycholinguistics,* which studies the perception, understanding and production of language, together with their development.

According to *learning theory,* associated with Skinner and Bandura, language development can be attributed primarily to environmental input and learning. But Chomsky's nativist approach argues that, although the environment may supply the content of language, grammar is an inherent, biologically determined capacity of human beings. Hence, the process of language development is essentially one of *acquisition* (as distinct from *learning*). Attempts to teach language to non-humans have major implications for Chomsky's claim that language is a uniquely human ability.

WHAT IS LANGUAGE?

According to Brown (1965), language is a set of arbitrary symbols:

> ... which, taken together, make it possible for a creature with limited powers of discrimination and a limited memory to transmit and understand an infinite variety of messages and to do this in spite of noise and distraction.

This 'infinite variety of messages' is called *productivity,* which Kuczaj & Hill (2003) describe as the most important characteristic of human language.

While other species are able to communicate with each other, they can do so only in limited ways, and it's perhaps the 'infinite variety of messages' part of Brown's definition that sets humans apart from non-humans. For example, wild chimpanzees use over 30 different vocalisations to convey a large number of meanings, and repeat sounds in order to intensify their meaning. However, they don't string these sounds together to make new 'words' (Calvin, 1994). The claim that chimpanzees are capable of using language is based largely, and until recently, on deliberate training (see below, pages 331–335). Human language is mastered spontaneously and quite easily within the first five years of life.



A single missing letter can totally change a word's meaning – and with it, the meaning of the entire sentence

What makes productivity possible is that humans acquire a *rule system*. This rule system is called *grammar* (or *mental grammar*). However, for psycholinguists, grammar is much more than the parts of speech we learn about in school. It's concerned with the description of language, the rules that determine how a language 'works', and what governs patterns of speech (Jackendoff, 1993).

THE MAJOR COMPONENTS OF GRAMMAR

Grammar consists of *phonology, semantics* and *syntax* (see Figure 19.1, page 321).

Phonology

Phonologists are concerned with a language's *sound system* – what counts as a sound and what constitutes an acceptable sequence of sounds. Basic speech sounds are called *phones* (or *phonetic segments*), and are represented by enclosing symbols inside square brackets. For example, [p] is the initial phone in the word 'pin'. Some languages have as few as 15 distinguishable sounds, and others as many as 85. The English language has 46 phones (Solso, 1995).

The phones that matter are those that affect the *meaning* of what's being said. For example, the difference between [p] and [d] matters because it can lead to two words with different meanings (such as 'pin' and 'din'). Because [p] and [d] cannot be interchanged without altering a word's meaning, they belong to different functional classes of phones called *phonemes* (*phonological segments*). Languages differ in their number of phonemes. *Phonological rules* constrain the permitted sequence of phonemes, which correspond roughly to the vowels and

consonants of a language's alphabet. However, languages (including English) can have more phonemes than letters in the alphabet. This is because some letters, such as 'o', can be pronounced differently (as in 'hop' and 'hope').

The development of speech sounds continues for several years after birth, and most children recognise sounds in adult speech before they can produce them. So, in response to the instruction: 'I am going to say a word two times and you tell me which time I say it right and which time I say it wrong: rabbit, wabbit', a child might reply: 'Wabbit is wight and wabbit is wong', indicating that the 'r' sound can be recognised but not yet produced (Dale, 1976).

Semantics

Semantics is the study of the *meaning* of language, and can be analysed at the level of *morphemes* and *sentences.* Morphemes are a language's basic units of meaning and consist mainly of words. Other morphemes are prefixes (letters attached to the beginning of a word, such as 'pre' and 're') and suffixes (word-endings, such as 's' to make a plural). Some morphemes, such as the plural 's', are 'bound' (they only take on meaning when attached to other morphemes), but most morphemes are 'free' (they have meaning when they stand alone, as most words have). But single words have only a limited meaning, and are usually combined into longer strings of phrases and sentences, the other level of semantic analysis.

Syntax

Syntax refers to the rules for combining words into phrases and sentences. One example of a *syntactic rule* is word order. This is crucial for understanding language development. Clearly, the sentences 'The dog bit the postman' and 'The postman bit the dog' have very different meanings!



'Then you should say what you mean', the March Hare went on. 'I do', Alice hastily replied; 'at least – at least I mean what I say – that's the same thing, you know'. 'Not the same thing a bit!' said the Hatter. 'Why, you might just as well say that 'I see what I eat' is the same thing as 'I eat what I see'!'

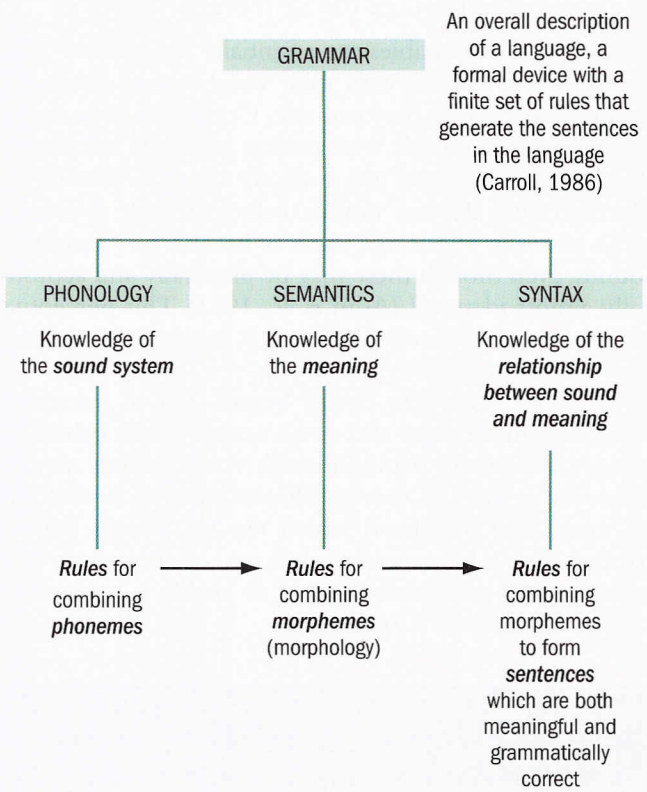


Figure 19.1 The major components of grammar

Another example of a syntactic rule occurs in the sentence 'The dog chased the …'. In English, only a noun can complete this sentence. Some sentences may be syntactically correct but lack meaning. For example, 'The player scored a goal' and 'The goal post scored a banana' are both syntactically correct, but one has much more meaning than the other. While sentences have sounds and meanings, syntax refers to the structures which relate the two.

STAGES IN LANGUAGE DEVELOPMENT

It's generally agreed that language development follows a universal timetable – that is, regardless of their language or culture, all children pass through the same sequence of stages at approximately the same ages (although children may vary with respect to their rate of development). While this belief implies the role of *maturation,* children can come to speak a language only if they're exposed to it.

It's also generally agreed that there are three major stages in language development. These are the *prelinguistic stage* (0–12 months), the *one-word stage* (12–18 months), and the *stage of two-word sentences.* This third stage is divided into two sub-stages: *stage 1 grammar* (18–30 months) and *stage 2 grammar* (30 months and beyond).

The prelinguistic stage (0–12 months)

In their first year, babies are essentially *prelinguistic*. They make various sounds with their vocal organs (including crying) long before they can talk. Crying tends to dominate in the first month, with parents gradually learning to discriminate between the various cries (Gustafson & Harris, 1990). By one month, babies are able to distinguish between phonemes (such as 'ba' and 'pa') and other sounds, even though these may be physically and acoustically almost identical (Aslin *et al.*, 1983). This perceptual ability (*categorical speech perception*) is probably innate (see Box 19.7, page 328).

At about six weeks, *cooing* begins. This is associated with pleasurable states and doesn't occur when babies are hungry, tired or in pain. Although vowel sounds may be produced at this age, they're different from those that will be made later and from which the first words will be formed. This is because the baby's oral cavity and nervous system aren't sufficiently mature to enable it to produce the sounds necessary for speech.

Box 19.1 The development of babbling

- This is the major development in the first year of life, and usually begins between six and nine months. Phonemes are produced and take the form of combinations of consonants and vowels (such as *ma* and *da*). These may be repeated to produce *reduplicated monosyllables* (such as *mama* and *dada*). Although these are very different from the earlier cooing sounds, they have no meaning.
- Babbling and pre-babbling vocalisations differ in two main ways:
  1. babies spend more time making noises, especially when alone in their cots (*spontaneous babbling*), and they seem to enjoy exercising their voices for the sake of it
  2. babbling has *intonational patterns*, just like speech, with rising inflections and speech-like rhythms; by one year, syllables are often produced over and over again (as in *dadadada*), a phenomenon called *echolalia*.
- Babbling occurs at around the same age in all babies regardless of culture, and even deaf babies of deaf–mute parents show a kind of 'sign-babbling' (Petitto, 1988). These findings suggest that the onset of babbling is based on maturation.

Babies initially produce only a few phonemes, but soon almost every available phoneme is produced, whether or not it belongs in what will become the baby's native language (*phonemic expansion*). At around 9–10 months, *phonemic contraction* begins: phoneme production is now restricted to those used in the baby's native language. At this stage, babies of different 'native tongues' can already be distinguished by the sounds they produce. Additionally, deaf babies usually stop babbling at around this time, presumably because of the lack of feedback from their own voices. By two and a half years, still only about 60 per cent of the phonemes used in English are mastered, and complete mastery won't be achieved until around age seven.

One-word stage

ASK YOURSELF...

- How do words differ from a baby's babbling?
- When people ask parents 'Is your baby talking yet?', what do they mean?

Typically, a child produces its first word at around one year, although there's considerable variability in this (Rice, 1989). Babies don't, of course, suddenly switch from babbling to the production of words, and non-words (*jargon*) continue to be produced for up to another six months. Their first words (or *articulate sounds*) are often invented, quite unlike 'adult words', phonologically the easiest (most similar to their babbling). This also explains why the words for mother and father are so similar across a wide range of different languages (Siegler, 1998).

Scollon (1976) has defined a word as 'a systematic matching of form and meaning'. On this definition, 'da' is a word if it's consistently used to refer to a doll, since the same sound is being used to label the same thing or kind of thing, and there's a clear intention to communicate.

However, an infant's earliest words are usually *context-bound*, produced in only very limited and specific situations or contexts in which particular actions or events occur (Barrett, 1989). For example, one infant, at least initially, only produced the word 'duck' while hitting a toy duck off the edge of a bath. The word was never used in any other context. Barrett argues that an infant's first words often *don't* serve a communicative purpose as such. Rather, because they typically occur as accompaniments to particular actions or events (as in the case above), they function as '*performatives*'. Some words may be more like the performance of a ritualised action than the expression of a lexical meaning to another person. However, words seem to have either:

- an *expressive function* – they communicate internal states (such as pleasure and surprise) to others, or
- a *directive function* – the behaviour of others is directed (by, for example, requesting or obtaining and directing attention).

Box 19.2 Holophrases: making a sentence out of a word

- The one-word stage is also characterised by the use of *holophrases*.
- In holophrastic speech, a single word (such as 'milk') is used to convey a much more complex message (such as 'I want some more milk' or 'I have spilt my milk').
- Because holophrases are accompanied by gestures and tone of voice to add full meaning to an individual word, they may be seen as precursors of later, more complex sentences (Greenfield & Smith, 1976). They represent 'two-word meanings' (word plus gesture) before two words are actually used together in speech (Bates *et al.*, 1987). But they depend on the recipient of the holophrase making the 'correct' interpretation.

Nelson (1973) identified six categories of words, and calculated the percentage of children's first 50 words (typically acquired by 19 to 20 months) that fell into each category.

Table 19.1 Nelson's six categories and the percentage of children's first 50 words falling into each of them

1	**Specific nominals:**	names for unique objects, people or animals (14 per cent)
2	**General nominals:**	names for classes of objects, people or animals, e.g. 'ball', 'car', 'milk', 'doggie', 'girl', 'he', 'that' (51 per cent)
3	**Action words:**	describe or accompany actions or express or demand attention, e.g. 'bye-bye', 'up', 'look', 'hi' (13 per cent)
4	**Modifiers:**	refer to properties or qualities of things, e.g. 'big', 'red', 'pretty', 'hot', 'all gone', 'there', 'mine' (9 per cent)
5	**Personal–social words:**	say something about a child's feelings or social relationships, e.g. 'ouch', 'please', 'no', 'yes', 'want' (8 per cent)
6	**Function words:**	have only a grammatical function, e.g. 'what', 'is', 'to', 'for' (4 per cent)

Nelson argued that it's not just the amount of exposure to objects and words that's important in word acquisition. Rather, given that specific and general nominals and action words make up the vast majority of those produced (78 per cent), it's the child's *active involvement* with its environment that determines many of its first words.

The kinds of things that first words refer to are similar the world over. They're the things that matter to a one-year-old: parents, siblings, pets, toys, clothes and food. Things that *move* are also more likely to be named (e.g. a bus rather than the road) (Schaffer, 2004).

Children understand more words than they can produce. For example, a child who uses 'bow-wow' to refer to all small animals will nonetheless pick a picture of a dog, rather than any other animal, when asked to select a 'bow-wow' (Gruendel, 1977). The child's *receptive vocabulary* (the words it can understand) is therefore much bigger than its *expressive vocabulary* (the words it uses in speech).

Even before age two, children begin acquiring words at the rate of about 20 per day (Miller, 1978). While some of these are context-bound, they gradually become more *decontextualised*. Other words are used from the start in a decontextualised way (Barrett, 1989). As the one-word stage progresses, the child becomes able to ask and answer questions, and provide comments on people and objects in the immediate environment. These abilities enable the child to participate in very simple conversations with other people.

Stage of two-word sentences

Like the one-word stage, the *two-word stage* is universal (although individual differences become more marked). Also, like the transition from babbling to the one-word stage, the transition to the two-word stage is gradual (Slobin, 1979). As well as continued vocabulary development, the understanding of grammar grows. Brown (1973) divides this stage into *stage 1* and *stage 2 grammar.*

Stage 1 grammar (18–30 months)

Here, the child's speech is essentially *telegraphic* (Brown, 1973); that is, only those words which convey the most information (*contentives*) are used. Purely grammatical terms (*functors*), such as the verb 'to be', plurals and possessives, are left out. For example, children will say 'There cow' to convey the underlying message 'There is a cow'. It seems that irrespective of culture, children express basic facts about their environment (Brown, 1973).

Telegraphic speech has a *rigid word order,* which seems to preserve a sentence's meaning. For example, if asked 'Does John want some milk?', the child might reply 'John milk' (or, later on, 'John want milk'). Adult speech, by contrast, doesn't rely exclusively on word order to preserve meaning, as in the passive form of a sentence. So, 'John drank the milk' and 'The milk was drunk by John' both convey the same meaning, even though the word order is different.

Children's imitations of adult sentences are also simple and retain the original sentence's word order. For example, 'John is playing with the dog' is imitated as 'Play dog' (*imitation by reduction:* Brown, 1965). Complementary to this is *imitation with expansion,* in which the adult imitates the child's utterances by inserting the 'missing' functors. The rigid order of the child's utterances makes it easier to interpret their meaning, but gestures and context still provide important clues (as with the one-word stage).

ASK YOURSELF...

- How would you adapt your speech when talking to a young child compared with how you talk to other adults?

Box 19.3 Motherese

- Babies are exposed to an undifferentiated series of speech sounds (*speech stream*: Jusczyk, 1997), but they need to separate this into individual sounds and sound combinations in order to learn the relevant sounds of their language (phonemes and morphemes). For example, the way an adult might ask a seven-year-old a question could be represented as 'Wheredidyougowithgrandpa?' (the words are joined when they're being spoken). But long before the child learns to read (where the words are spaced), how does it learn to *hear* 'Where did you go with grandpa?' (Slobin, 1979)?
- Part of the answer is *motherese* (or *infant-directed speech*).
- Compared with talking to one another, adults talking to children tend to use much shorter sentences and simpler syntax, raise the pitch of their voice for emphasis, use their voice more rhythmically, and repeat or paraphrase much of what the child says.
- This helps to achieve a mutual understanding with children who haven't yet mastered the full complexity of language. Sensitivity to the child's vocabulary and its intellectual and social knowledge is an example of a *pragmatic rule* for ensuring a degree of shared understanding (Greene, 1990).
- It also supports a *social interaction approach* to language acquisition (see page 330).

Children's two-word utterances aren't just random word combinations, but are based on rules. They focus on certain types of words, and put them together in particular orders. However, not all children seem to use exactly the same rules (Braine, 1976), and children convey many different meanings with exactly the same sentence forms.

Table 19.2 Some of the different meanings children appear to express in Stage 1 Grammar (Maratsos, 1983)

Meaning	Examples
agent–action	Sarah eat; Daddy jump
action–object	eat cookie; read book
possessor–possessed object	Mommy sock; Timothy lunch
action–location	come here, play outside
located object–location	sweater chair; juice table
attribute–modified object	big book; red house
nomination	that cookie; it dog
recurrence	more juice; other book

For example, young children often use a sentence composed of two nouns, such as 'Mommy sock' or 'sweater chair' (Bloom, 1973). We might conclude from this that a 'two-noun' form is a basic grammatical characteristic of early language – but this would miss its complexity (Bee, 1989). For example, the child in Bloom's study said 'Mommy sock' when she picked up her mother's sock, and again when the Mother put the child's own sock on the child's foot. In the first case 'Mommy sock' seems to mean 'Mommy's sock' (a *possessive* relationship), while in the second instance, it conveys 'Mommy's putting the sock on me' (an *agent–object* relationship).

Box 19.4 Cromer's (1974) cognition hypothesis

- Word order in two-word utterances seems to reflect the child's *prelinguistic knowledge*.
- According to Cromer's *cognition hypothesis*, language structures can be used correctly only when permitted by our cognitive structures. Children form *schemata* to understand the world and then talk about it.
- A good example is *object permanence*, which is a prerequisite for understanding that words can represent things. If a child didn't already understand the relationships between objects, people and events in the real world, its first words would be like random unconnected lists.
- These are important concepts in Piaget's developmental theory (see Chapter 34), and are consistent with his view of language development reflecting the child's stage of cognitive development (see Chapter 18).

Stage 2 grammar (from about 30 months)

This lasts until around age four or five, and while it may be different for different languages, the rule-governed nature of language development is universal. The child's vocabulary grows rapidly, and sentences become longer and more complex. *Mean length of utterance* (MLU) is the number of words in a sentence divided by the total number of sentences produced. So, a child who produced 100 sentences with 300 words would have an MLU of 3.00.

The increase in MLU shown in Figure 19.2 is due largely to the inclusion of the functors that are omitted from the telegraphic speech of stage 1 grammar. For example, 'Daddy hat' may become 'Daddy wear hat' and finally 'Daddy is wearing a hat'. Sentences also become longer because conjunctions (such as 'and' and 'so') are used to form compound sentences like 'You play with the doll and I play with the ball'. Stage 2 grammar, then, really begins with the first use of purely grammatical words. While most children up to 20 months still use one- or two-word sentences, by 24 months the longest sentences include four to five words. By 30 months, this has risen to between eight and ten. This is strongly linked to vocabulary development (Fenson *et al.*, 1994).

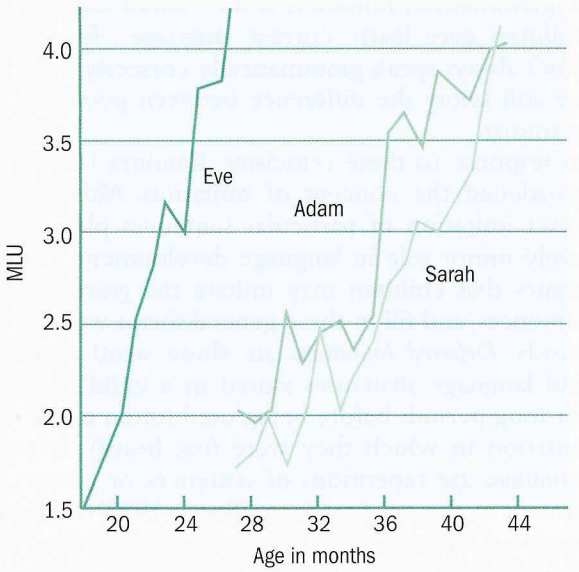


Figure 19.2 Mean length of utterance (MLU) plotted against age in months for three children (based on Brown, 1973)

Brown (1973) found a distinct regularity among English-speaking children in terms of the order in the addition of grammatical complexities. Similarly, de Villiers & de Villiers (1979) found that, irrespective of culture, children acquire functional words in the same general order but at different rates. Each function word corresponds to a syntactic rule. Several studies show that when children begin to apply these rules (such as the rule for forming plurals), they're not just imitating other people.

KEY STUDY 19.1 Wugs rule OK (Berko, 1958)

- Berko showed children a picture of a fictitious creature called a wug and told them 'This is a wug'.



This is a wug

- They were then shown a second picture in which there were two of the creatures and told 'Now there is another one. There are two of them'.



Now there is another one.
There are two of them.
There are two _____

- The children were asked to complete the sentence 'There are two ...'.
- Three- and four-year-olds answered 'wugs' despite never having seen a 'wug' before.
- Although the children couldn't have been imitating anybody else's speech, and hadn't been told about the rule for forming plurals, they were able to apply this rule. Significantly, they weren't consciously aware of having acquired the rule for forming a plural, and couldn't say what the rule was.

ASK YOURSELF...

- Can you think of any other examples of grammatical rules that children of this age display (including their speech errors)?

The rule-governed nature of language is also shown in children's grammatical mistakes. For example, while the rule 'add an 's' to a word to form a plural' usually works, there are exceptions to it (such as 'sheep' rather than 'sheeps' and 'geese' rather than 'gooses'). Similarly, the rule 'add 'ed' to form the past tense' usually works, but not in the case of 'cost' and 'go'. The observation that children use words like 'costed' and 'goed', without ever having heard others use them, suggests that they're applying a rule rather than just imitating. But the rule is being *overgeneralised* or the language *over-regularised*. It also shows that children are actively and quite spontaneously involved in rule learning, and that they're trying to make sense of the whole business of how to talk (Schaffer, 2004).

By age four or five, basic grammatical rules have been acquired, but a typical five-year-old will have difficulty understanding passive sentences. There are also many irregular words still to be learned, and this aspect of grammatical development will take several more years.

By age 13, most English-speaking children have a vocabulary of 20,000 words, and by age 20, this will have risen to 50,000 or more (Aitchison, 1996). This vocabulary is acquired at an average rate of 10 words per day (Pinker, 1994).

THEORIES OF LANGUAGE DEVELOPMENT

Learning theory: operant conditioning

According to Skinner (1985):

> Verbal behaviour evidently came into existence when, through a critical step in the evolution of the human species, the vocal musculature became susceptible to operant conditioning.

ASK YOURSELF...

- Given what you know about operant conditioning (see Chapter 11), how do you think Skinner might have tried to explain language development?

Skinner (1957) first applied operant conditioning principles to explain language development when he argued that:

> A child acquires verbal behaviour when relatively unplanned vocalisations, selectively reinforced, assume forms which produce appropriate consequences in a given verbal community.

While Skinner accepted that prelinguistic vocalisations, such as cooing and babbling, were probably inborn, he argued that adults *shape* the baby's sounds into words by reinforcing those which approximate the form of real words. Through *selective reinforcement,* words are shaped into sentences with correct grammar being reinforced and incorrect grammar ignored.

One form of positive reinforcement is the child getting what it asks for (*mands*). For example, 'May I have some water?' produces a drink that reinforces that form of words. Reinforcement may also be given by parents becoming excited and poking, touching, patting and feeding children when they vocalise. The mother's delight on hearing her child's first real word is exciting for the child, and so acquiring language becomes reinforcing in itself.

Skinner also believed that *imitation* (emitting *echoic responses*) plays an important role. When children imitate verbal labels (*tacts*), they receive immediate reinforcement in the form of parental approval to the extent that the imitations resemble correct words. As children continue to learn new words and phrases through imitation, so their language becomes progressively more like that of adults (Moerk & Moerk, 1979).

ASK YOURSELF...

- How easily can operant conditioning explain the stages of language development described on pages 322–325?

An evaluation of Skinner's theory

- While imitation must be involved in the learning of accent and vocabulary, its role in complex aspects of language (syntax and semantics) is less obvious. As we saw earlier, when children do imitate adult sentences, they tend to convert them to their own currently operating grammar. So, between 18 and 30 months, the child's imitations are as telegraphic as its own spontaneous speech. However, a child is more likely to imitate a correct grammatical form after an adult has *recast* the child's own sentences than when the adult uses the same grammatical form spontaneously in normal conversation (Farrar, 1992; Nelson, 1977). Recasting, though, is relatively rare (or sometimes non-existent) in normal toddler–parent conversations, yet children still acquire a complex grammar (Bee, 2000). Since at least some adult language is ungrammatical, imitation alone cannot explain how children ever learn 'correct language'. Even if we don't always speak grammatically correctly ourselves, we still know the difference between good and bad grammar.
- In response to these criticisms, Bandura (1977a) has broadened the concept of imitation. Although the exact imitation of particular sentences plays a relatively minor role in language development, Bandura argues that children may imitate the *general form* of sentences, and fill in these general forms with various words. *Deferred imitations* are those word sequences and language structures stored in a child's memory for long periods before being used (often in the same situation in which they were first heard). *Expanded imitations* are repetitions of sentences or phrases not present in the original form (Snow, 1983). Children's language production sometimes exceeds their competence in that they imitate forms of language they don't understand. By storing examples of adult language in memory, children have a sort of 'delayed replay' facility that enables them to produce language forms after they've been acquired.
- Operant conditioning cannot explain the *productivity* (or *creativity*) of language. As Chomsky (1968) states:

  > The normal use of language is innovative, in the sense that much of what we say in the course of normal language use is entirely new [and] not a repetition of anything that we have heard before.

- Operant conditioning cannot explain children's spontaneous use of grammatical rules which they've never heard or been taught, and especially the overgeneralisation of these rules (see Box 19.5).
- Operant conditioning cannot account for children's ability to understand sentence as opposed to word meaning. A sentence's meaning is not simply the sum of the meanings of the individual words. The structure of language is comparable to the structure of perception as described by the Gestalt psychologists (Neisser, 1967: see Chapter 15).
- Brodbeck & Irwin (1946) found that, compared with institutionalised children who received less attention, children whose parents reinforced their early attempts at meaningful sounds tended to vocalise more. Parents often reinforce children when they imitate adult language, and, using behaviour modification, Lovaas (1987) has shown that selective reinforcement can be used successfully to teach language to emotionally disturbed or developmentally delayed children (see Chapter 45). However, Skinner's views have been challenged by a number of researchers.

Box 19.5 Does selective reinforcement have any influence on children's grammar?

- Mothers respond to the 'truth value', or presumed meaning of their children's language, rather than to its grammatical correctness or complexity. Mothers extract meaning from, and interpret, their children's incomplete and sometimes primitive sentences (Brown *et al.*, 1969).
- Tizard *et al.* (1972) argue that attempts to correct grammatical mistakes or teach grammar have very little effect. Indeed, vocabulary develops more slowly in children of mothers who systematically correct poor word pronunciation and reward good pronunciation (Nelson, 1973).
- Slobin (1975) found that children learn grammatical rules *despite* their parents, who usually pay little attention to the grammatical structure of their children's speech and often reinforce incorrect grammar. According to Slobin:

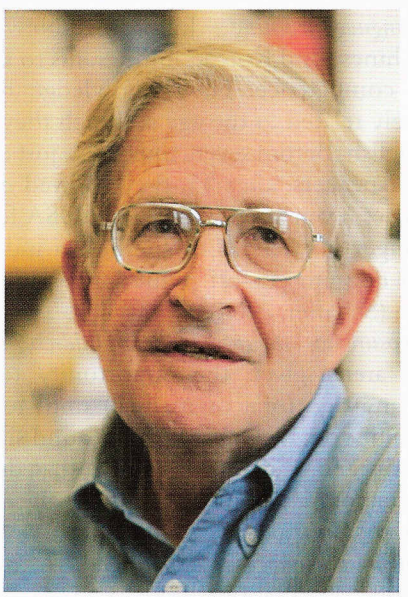
A mother is too engaged in interacting with her child to pay attention to the linguistic form of [its] utterances.

Chomsky's LAD and the biological approach

Although language cannot develop without some form of environmental input, Chomsky (1957, 1965, 1968), Lenneberg (1967) and McNeill (1970) believe that environmental factors could never explain language development adequately. Chomsky proposed the existence of an innate *language acquisition device* (LAD), whereby children are born already programmed to formulate and understand all types of sentences even though they've never heard them before.

Chomsky (1957) argued that language is much more complex and much less predictable than Skinner believed. Central to his theory of *transformational grammar* (TG) are *phrase-structure rules,* which specify what are acceptable/unacceptable utterances in a speaker's native language. When applied systematically, these rules generate sentences in English (or any other language).

While phrase-structure rules specify some important aspects of language, they don't specify them all (Chomsky, 1957).



Noam Chomsky (born 1928)

Rule (1) An S (sentence) consists of (or can be broken down into) NP (noun phrase) and VP (verb phrase)

Rule (2) NP → Article + (Adjective) + Noun

(The brackets denote 'optional')

Rule (3) VP → Verb + NP

Rule (4) Article → a(n), the

Rule (5) Adjective → big, small, red etc.

Rule (6) Noun → boy, girl, stone etc.

Rule (7) Verb → hit, threw, helped etc.

These are *lexical rewrite rules.*

The commas imply that only *one* word should be selected from the list

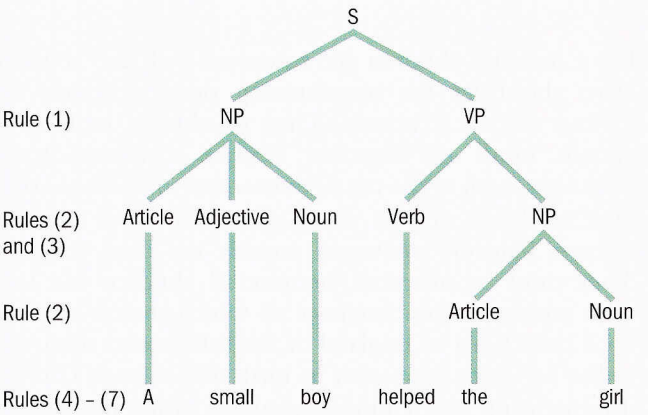


Figure 19.3 Some of Chomsky's phrase-structure rules and an example of a sentence produced by using them

Box 19.6 Deep and surface structure, and TG

- A sentence's *surface structure* refers to the actual words or phrases used in the sentence (its *syntactical structure*), while its *deep structure* more or less corresponds to the *meaning*.
- Chomsky argues that when we hear a spoken sentence, we don't 'process' or retain its surface structure, but transform it into its deep structure.
- Transformational grammar (TG) is knowing how to transform a sentence's meaning into the words that make it up (and vice versa). This knowledge is an innate LAD, and is what enables us to produce an infinite number of meaningful sentences.

- A *single* surface structure may have *more than one* deep structure, as in the sentence 'The missionary was ready to eat'. This could be interpreted either as 'The missionary is ready to consume a meal' or 'The missionary has been prepared for consumption by others'.
- Conversely, *different* surface structures can have the *same* deep structure (as in the sentences 'A small boy helped the girl' and 'The girl was helped by a small boy').

ASK YOURSELF...

- Try a Chomsky-type analysis on the following.
  - Cleaning ladies can be delightful.
  - Shaving men can be dangerous.

For Chomsky, children are equipped with the ability to learn the rules for transforming deep structure into various surface structures. They do this by looking for certain kinds of linguistic features common to all languages, such as the use of consonants and vowels, syllables, modifiers and so on. Collectively, these linguistic features (*linguistic universals*) provide the deep structure. They must be universal, because all children can learn with equal ease any language to which they're exposed. So, a child born in England of English parents who went to live in China soon after its birth would learn Chinese, if brought up by a Chinese-speaking family, just as easily as a native-born Chinese child. Chomsky argues that only some kind of LAD can account for children's learning and knowledge of grammatical rules in view of the often ungrammatical and incomplete samples of speech they hear.

Chomsky didn't suggest that we go through the procedures of phrase structure and TG each time we prepare to speak a sentence (Hampson & Morris, 1996). A language's grammar is an idealised description of the *linguistic competence* of its native speakers. Any model of how this competence is applied in actual performance must acknowledge certain psychologically relevant factors, such as memory, attention, the workings of the nervous system, and so on (Lyons, 1970).

Box 19.7 Some evidence supporting Chomsky's theory

- The human vocal organs, breathing apparatus, auditory system, and brain are all specialised for spoken communication.
- Babies as young as two days old can discriminate between 'ba' and 'pa' sounds (Eimas, 1975). According to Chomsky, these phonetic discriminations can be thought of as the first linguistic universals the baby discovers.
- All adult languages appear to have certain linguistic universals. TG is acquired in some form by all people (unless brain-damaged or reared in isolation), irrespective of culture and general intelligence. For Lenneberg (1967), this shows that language acquisition must be controlled by genetic factors that are (at least partially) independent of those controlling general intelligence.
- Studies of congenitally deaf children have shown the emergence of 'gestural language', even though the children received no encouragement or training from their parents (Gerrard, 1997; Goldin-Meadow & Feldman, 1977). These languages have the characteristics of ordinary languages (such as verbs, nouns and syntax), supporting the view that knowledge of syntax is innate. These findings also demonstrate that language is very difficult to suppress even in adverse environmental circumstances. As Bee (2000) says:

  The baby is somehow primed to learn 'language' in some form, be it spoken or gestural.

Is there a critical period for language?

Lenneberg has argued that the years leading to puberty constitute a *critical period* for language development, based on the still-developing brain's relative lack of specialisation. Children born brain-damaged or who lose their language abilities, can relearn at least some of them because other, non-damaged, parts of the brain seem to take over. But adolescents or adults who experience an equivalent amount of damage are unable to regain abilities corresponding to the site of the injury, because the brain is now specialised (or 'committed') and no longer 'plastic' (see Chapter 4).

According to Locke (1993), there are four main sources of relevant data.

1. *Second-language learning* – Johnson & Newport (1989) tested Chinese and Korean immigrants to the USA for English competence. Their knowledge of grammar was closely related to the age at which they'd begun to learn English. Before seven, they were just as proficient as native speakers; after 15, they showed considerable deficiencies (even after living in the USA for as long as the younger learners). But there's no indication that there's a definite cut-off point for learning a second language (Schaffer, 2004).
2. *Late exposure to language in deaf children* – some deaf children aren't given the opportunity to acquire a formal language (oral or manual) until relatively late on in childhood. Newport (1990) found similar results to Johnson and Newport: the later that deaf children are first exposed, the more difficulty they have – but again there's no specific cut-off point.
3. *Effects of brain damage at different ages* – this relates to Lenneberg's observations above.
4. *Children reared in isolation* – see Case Study 19.1.

CASE STUDY 19.1: Genie (Curtiss, 1977)

- Genie was an American child raised in conditions of extreme (de)privation until her discovery (in 1970) at the age of 13 years and seven months.
- Among other appalling treatment, Genie was beaten if she made any noise, and had learned to suppress almost all vocalisations except for a whimper. According to Curtiss, 'Genie was unsocialised, primitive, hardly human'.
- Genie could understand a handful of words (including 'rattle', 'bunny' and 'red'), but always responded to them in the same way. Essentially, then, she had to learn language at the age of nearly 14.
- She never developed normal language skills, and by age 18 could produce only short sentences that lacked important aspects of grammar (such as the use of pronouns).
- Her vocabulary expanded and she could hold a conversation, but her use of intonation was poor and only those who knew her well could understand much of what she said. Genie herself had great difficulty in understanding complex syntax.

The fact that Genie was capable of learning any language at all weakens Lenneberg's claim for a critical period. However, her obvious linguistic retardation is consistent with the existence of a *sensitive period* for language development. According to Schaffer (2004), the 'safe and not very startling conclusion' is that:

> ... childhood is the optimal period for language learning. There is, however, some flexibility in the precise age when children need to start on this task, and there is also no definite indication supporting Lenneberg's contention that puberty is the point beyond which any further learning becomes possible.

An evaluation of Chomsky's theory

- Aitchison (1983) agrees with Chomsky's claim that children are 'wired' with the knowledge that language is rule-governed, and that they make a succession of hypotheses about the rules underlying speech. However, she disputes the claim that the LAD also consists of TG (what she calls 'Content Cuthbert'). Aitchison prefers a *process* approach, in which children are seen as having inbuilt puzzle-solving equipment that enables them to process linguistic data along with other sorts of data ('Process Peggy').
- By contrast, Chomsky (1979) argues that an innate language ability exists *independently* of other innate abilities, because the mind is constructed of 'mental organs' which are:

  > ... just as specialised and differentiated as those of the body ... and ... language is a system easy to isolate among the various mental faculties.

- According to Chapman (2000), belief in some kind of LAD has persisted despite evidence that language structure is acquired piecemeal, occurs over a period of many years, and that there are wide variations in how quickly children acquire language. Also, language input to young children is well-formed, responsive to the child's communicative attempts, well-adapted to the child's current focus of attention and understanding. This suggests that language development needs to be understood within the context of the child's social interactions, rather than by focusing almost exclusively on what the child possesses in the form of a LAD.
- Kuczaj & Hill (2003) believe that the data relating to parents' influence on children's syntactic development (see Box 19.5) support Chomsky's claim that parents' role isn't significant. However:

  > ... they do in fact learn the language that they have heard their parents speak ...

  Parents do a much better job of providing children with good examples of grammatical sentences than Chomsky gives them credit for.
- But Chomsky insists that, however grammatically correct parents' speech might be, and however much they might adapt their speech to children's needs and abilities (see Box 19.3), it still consists only of *surface structure*. The only source of *deep structure*, he says, is an innate LAD. But Kuczaj & Hill (2003) draw a distinction between a *predisposition* to learn language (which is relatively uncontroversial and widely accepted) and *innate knowledge* of language (Chomsky's much more controversial claim that is accepted by very few).

Some alternatives to learning theory and biological approaches

Recently, there's been a growing acceptance that neither operant conditioning nor nativist approaches offers a complete account of language development. Instead, an *integrated view* maintains that:

- children cannot acquire language until an appropriate maturational level has been reached, but that
- language development is more closely related to environmental input and cognitive development than Chomsky proposes.

Maratsos (1983) has identified several assumptions made by *integrative theorists*.

Box 19.8 Some assumptions made by integrative theorists

- Children are highly motivated to communicate, and therefore are active language learners.
- Children can learn the major aspects of grammar because they've already acquired important concepts on which grammar is based (namely that events involve agents, actions, objects of actions, and so on). For this

reason, learning a grammar doesn't require much information-processing.
- Other aspects of language can be explained by the language parents use to talk to children.
- Those grammatical rules that don't fit in with children's natural cognitive processes, and aren't conveyed adequately through parental input, are unnatural and difficult for the child. They're also acquired very late (such as the passive voice in English).

ASK YOURSELF...

- What aspects of the interaction between a baby and its caregiver might be important for the baby's future language development? Think of this from the perspective of *both* partners.

The language and social-interaction approach

One alternative explanation to Chomsky's of the rule-bound nature of children's speech, is that it arises from the child's *prelinguistic knowledge* (see Box 19.4). During the 1970s, psychologists began to look at language development in the first 12 to 18 months of life, because the basic skills acquired then contribute substantially to the syntactic skills characteristic of adult language.

A purely syntactic analysis of language cannot explain how children 'discover' their language; that is, how they learn that there's such a thing as language which can be used for communicating, categorising, problem-solving and so on. However, Smith *et al.*'s (1998) *language and social-interaction approach* sees language as being used to communicate needs and intentions, and as an enjoyable means of entering into a community.

Several studies have indicated how babies initially master a social world on to which they later 'map' language. Snow (1977), for example, notes that adults tend to attach meaning to a baby's sounds and utterances. As a result, burps, grunts, giggles and so on are interpreted as expressions of intent and feeling, as are non-verbal communications (such as smiling and eye contact). Snow sees this as a kind of primitive conversation (or *proto-conversation*). This has a rather one-sided quality, in that it requires a 'generous' adult attributing some kind of intended meaning to the baby's sounds and non-verbal behaviours. From this perspective, the infant is an inadequate conversational partner.

Box 19.9 Visual co-orientation, formats and turn-taking: two-way interaction

- *Visual co-orientation* (or *joint attention*) and *formats* (Collis & Schaffer, 1975) are exchanges that are far more two-way than proto-conversations.
- Visual co-orientation involves two individuals coming to focus on some common object. This puts an infant's environmental explorations into a social context, so that an infant–object situation is converted into an infant–object–mother situation (Schaffer, 1989).
- This entails joint attention, which provides opportunities for learning how to do things. So, as parents and children develop their mutual patterns of interaction and share attention to objects, some activities recur, as happens, for instance, in joint picture-book reading.
- Bruner (1975, 1978) uses 'formats' to refer to rule-bound activity routines, in which the infant has many opportunities to relate language to familiar play (as when the mother inserts name labels into a game or activity), initially in *indicating* formats and later in *requesting* them (see Box 19.10).
- These ritualised exchanges stress the need for *turn-taking* (which occurs in games such as peek-a-boo, and give-and-take), and so help the baby to discover the social function of communication. As a result, the infant can learn about the structures and demands of social interaction, and prepare and rehearse the skills that will eventually become essential to successful interchanges such as conversation.
- As Schaffer (2004) says:

  ... the acquisition of language is very much a social interactive process and ... any attempt to understand it in terms of the activities of the learner alone is doomed to failure ...



Peek-a-boo: the fun of turn-taking

LASS: the active adult

According to Bruner (1983), formats comprise the *language acquisition support system* (LASS). He's concerned with the *pragmatics* and *functions* of language (what language is for). In Bruner's view:

Entry into language is entry into discourse that requires both members of a dialogue pair to interpret a communication and

its intent. Learning a language ... consists of learning not only the grammar of a particular language, but also learning how to realise one's intentions by the appropriate use of that grammar.

The emphasis on intent requires a far more active role on the adult's part in helping a child's language acquisition than just being a 'model', or providing the input for the child's LAD. According to Moerk (1989), 'the LAD was a lady', that is, the lady who does most of the talking to the child (namely its mother). Mothers simplify linguistic input and break it down into helpful, illustrative segments for the child to practise and build on (see Box 19.3). This view sees language development as a very sophisticated extension of the processes of meaningful interaction that the caregiver and child have constructed over several months (Durkin, 1995).

The active child

Another way of looking at the 'partnership' is to see the infant as being the more 'active' partner. The view of language as a *cause–effect analytic device* has been summarised by Gauker (1990), for whom:

The fundamental function of words is to bring about changes in the speaker's environment ... Linguistic understanding consists of a grasp of these causal relations.

Box 19.10 The emergence of communicative intentionality

- According to Gauker (1990), language comprises a set of symbols whose use results in a change of behaviour in the listener. The use of words as communicative tools is shown in the emergence of *communicative intentionality*.
- During the prelinguistic stage, children have no awareness that they can gain a desired effect indirectly by changing somebody else's behaviour. So, they may cry and reach for something, but not direct the cry towards the caregiver or look back at the caregiver. The cry merely expresses frustration, and isn't a communicative signal designed to affect the other's behaviour. This 'analysis' of means–ends relationships (what causes what) solely as a product of one's own actions, is called *first-order causality*.
- The emergence of communicative intentionality involves *second-order causality*, the awareness that it's possible to bring about a desired goal by using another person as a tool. Pointing gestures and glances now rapidly increase as a means of asking others to look at or act upon an object.
- According to Savage-Rumbaugh (1990), the child is beginning to understand in a general sense:

  ... that it is possible to 'cause' others to engage in desired actions through the mechanism of communication about those actions.

However, it's easier to analyse language *production* than language *comprehension* in terms of a cause–effect analysis: what do we cause to happen when we understand things that have been said to us? Based on her work with chimpanzees, Savage-Rumbaugh (1990) concludes that language comprehension is clearly the driving force underlying the language acquisition process: under normal circumstances, language production is just one outcome of the development of language comprehension (see below, pages 334–335).

TEACHING LANGUAGE TO NON-HUMAN ANIMALS

As we've seen, Chomsky believes that language is unique to human beings. Similarly, Lenneberg claims that it represents a *species-specific* behaviour, common to all humans and found only in humans. But if non-humans can be taught to use language, then they must have the capacity for language. The obvious subjects for such language training are our closest evolutionary relatives, chimpanzees and gorillas (the non-human primates).

Criteria for language

We need to define language in a way that will enable us to evaluate the results of studies where humans have tried to teach it to speechless non-humans. Hockett (1960) proposed 13 'design features' of language (see Figure 19.4). Based on these, Aitchison (1983) proposed that ten criteria should be sufficient (not all of these are included in Hockett's list). These are shown in Table 19.3.

By analysing human and non-human animal language in terms of all ten criteria, Aitchison concludes that four are unique to humans. These are highlighted in Table 19.3. It's in terms of these criteria that attempts to teach language to non-human primates have been evaluated.

Early studies

Early attempts to teach chimpanzees to speak were almost totally unsuccessful. Kellogg & Kellogg (1933) raised Gua with their own child and treated them exactly alike. Although Gua could understand a total of 70 words or commands, she failed to utter a single word. Hayes & Hayes (1951) used operant conditioning in what was the first deliberate attempt to teach human language to a non-human – Viki, a baby chimp. By age three, she could say 'up' and 'cup' and (less convincingly) 'mama' and 'papa'. It became obvious that the vocal apparatus of a chimp is unsuited to making English speech sounds.

However, this doesn't rule out the possibility that chimps may still be capable of learning language in some non-spoken form. This is precisely what several psychologists have tried to demonstrate since the 1960s in what have come to be called *production-based training* (see Gross, 2003a; Gross *et al.*, 2000).

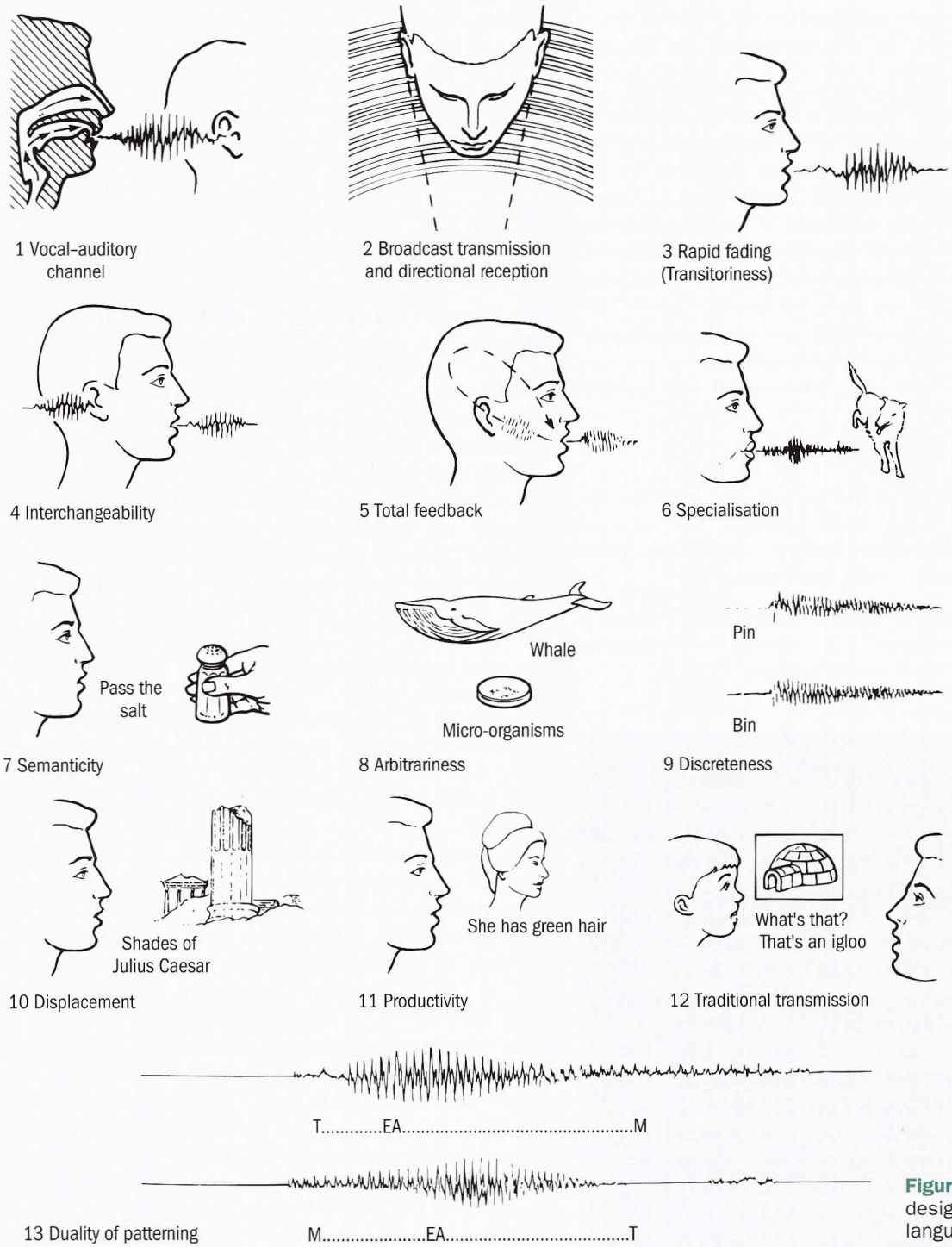


Figure 19.4 Thirteen design features of language (Hockett, 1960)

ASK YOURSELF...

- Why do we need to know if non-human primates are capable of language?
- Has this research any potential practical implications for the subjects?
- Does it have implications for how we see ourselves as a species?

Evaluating production-based studies

One way of evaluating the studies summarised in Table 19.4 (production–based training) is to ask whether the languages of children and chimps are qualitatively different.

As far as *semanticity* is concerned, is the correct use of signs to refer to things a sufficient criterion? Savage-Rumbaugh *et al.* (1980) seriously doubt whether any of the apes (including their own, Lana) used the individual

Table 19.3 Ten criteria for language (Aitchison, 1983, based on Hockett, 1960)

1	Use of the vocal–auditory channel	**6**	Turn-taking (conversation is a two-way process)
2	Arbitrariness (use of neutral symbols – words – to denote objects, actions etc.)	**7**	Duality (organisation into basic sounds plus combinations/sequences of sounds)
3	**Semanticity** (use of symbols to mean or refer to objects, actions etc).	**8**	**Displacement** (reference to things not present in time or space)
4	Cultural transmission (handing down the language from generation to generation)	**9**	**Structure dependence** (the patterned nature of language/use of 'structured chunks', e.g. word order)
5	Spontaneous usage (freely initiating speech)	**10**	**Creativity** (what Brown calls productivity: the ability to produce/understand an infinite number of novel utterances.

N.B. Items in bold are criteria unique to humans

elements of their vocabularies as words. Terrace (1987) argues that the deceptively simple ability to use a symbol as a name required a cognitive advance in the evolution of human intelligence at least as significant as the advances that led to grammatical competence.

The function of much of a child's initial vocabulary of names is to inform another person (usually an adult) that it has noticed something (MacNamara, 1982). A child often refers to the object spontaneously, showing obvious delight from the sheer act of naming. This *hasn't* been observed in apes. MacNamara believes that no amount of training could produce an ape with such an ability, for the simple reason that the act of referring isn't learnt but is a 'primitive of cognitive psychology' (and is a necessary precursor of naming). Instead, a chimp usually tries to 'acquire' an object (approach it, explore it, eat it), and shows no sign of trying to communicate the fact that it has noticed an object as an end in itself (Terrace, 1987).

Several critics have claimed that the linguistic abilities of chimps amount to a wholly 'instrumental use' of symbols. Referring to Savage-Rumbaugh's work with Kanzi (see below), Seidenberg & Petitto (1987) claim that Kanzi 'may not know what the symbols mean' but only 'how to produce behaviours that others can interpret'. However, Gauker (1990) argues that:

> ... we might do well to view 'knowing what symbols mean' as nothing other than an understanding of more or less sophisticated instrumental uses of symbols... even in human beings linguistic understanding consists in a grasp of the causal relations into which linguistic signs may enter ...

This relates to what we said earlier about the 'emergence of communicative intentionality' (see Box 19.10).

Table 19.4 The major studies which have attempted to teach language to non-human primates

Study	Subject	Method of language training
Gardner & Gardner (1969)	Washoe (female chimp)	American sign language (ASL or Ameslan). Based on a series of gestures, each corresponding to a word. Many gestures visually represent aspects of the word's meaning
Premack (1971)	Sarah (female chimp)	Small plastic symbols of various shapes and colours, each symbol standing for a word; they could be arranged on a special magnetised board. e.g. a mauve △ = 'apple'; a pale blue ✧ = 'insert'; a red □ = 'banana'
Rumbaugh *et al.* (1977)/Savage-Rumbaugh *et al.* (1980)	Lana (female chimp)	Special typewriter controlled by a computer. Machine had 50 keys each displaying a geometric pattern representing a word in a specially devised language ('Yerkish'). When Lana typed, the pattern appeared on the screen in front of her  'Lana' 'Eat'
Patterson (1978, 1980)	Koko (female gorilla)	American sign language
Terrace (1979)	Nim Chimpsky (male chimp)	American sign language

Operant conditioning is used in all these studies when signs etc. are correctly used.

Helping chimps be more like children

Since the 1980s, Savage-Rumbaugh, at the Yerkes Primate Centre and Georgia State University, has been working with chimps in a way which is much more like how children acquire language (and in certain respects more like that of the pioneers in this field, the Kelloggs' and the Hayes'). Instead of putting the chimps through rote learning of symbols, gradually building up a vocabulary a symbol at a time, Savage-Rumbaugh aimed to use a large vocabulary of symbols from the start, using them as language is used around human children. This represents a move away from an emphasis on grammatical structure (at least in the beginning) and towards *comprehension:*

> It seemed reasonable to me – obvious even – that comprehension was an important element of language, that language is first acquired through comprehension, and that production flows from that. (Savage-Rumbaugh, quoted in Lewin, 1991)

This new approach was applied on a limited scale with Austin and Sherman, two common chimps. But it really got going with some pygmy chimps (*bonobos*), which are slightly smaller than common chimps, and more vocal and communicative through facial expressions and gestures. In 1981, work began with Matata, who six months earlier had kidnapped a newborn infant, Kanzi, and kept him as her own. Instead of ASL, Savage-Rumbaugh used an extensive 'lexigram', a matrix of 256 geometrical shapes on a board (see the photograph in the *Introduction and overview*). Instructors touch the symbols, which represent verbs and nouns, to create simple requests or commands. At the same time, the sentence is spoken, with the aim of testing comprehension of spoken English. When the chimpanzee presses a symbol, a synthesised voice from the computer 'speaks' the word.

Although clearly intelligent in many ways, Matata was a poor learner and used only about six symbols. However, despite no attempt to teach Kanzi anything, he picked up the symbols Matata knew, as naturally as human children do. From that point onwards, an even greater effort was made to place language learning in a naturalistic context. Kanzi acquired a sister, Mulika, when he was two and a half years old and they grew up together.

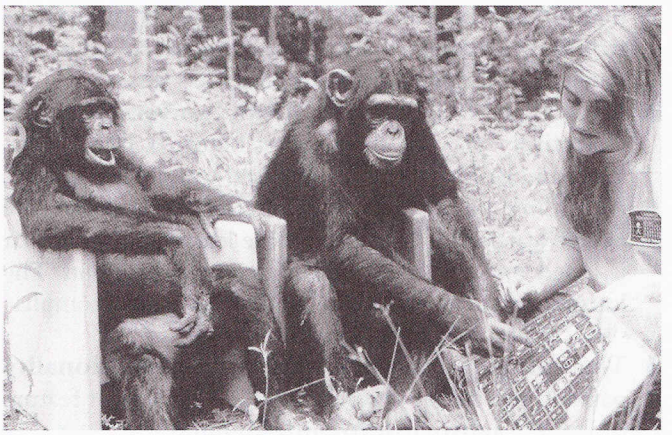
CASE STUDY 19.2: Kanzi

- By age ten (1991), Kanzi had a vocabulary of some 200 words. But it's not so much the size of his vocabulary that's impressive, rather what the words apparently mean to him.
- He was given spoken requests to do things, in sentence form, by someone out of his sight. Savage-Rumbaugh's assistants in the same room with Kanzi wore earphones, so they couldn't hear the instructions and thereby cue Kanzi, even unconsciously. None of the sentences was practised and each one was different. 'Can you put the raisins in the bowl?' and 'Can you give the cereal to Karen?' posed no problems for Kanzi. Nor did 'Can you go to the colony room and get the telephone?' (there were four or five objects in the colony room, which weren't normally there).
- More testing still was the instruction 'Go to the colony room and get the orange' when there was an orange in front of Kanzi. This caused him confusion about 90 per cent of the time. But if asked to 'Get the orange that's in the colony room', he did so without hesitation, suggesting that the syntactically more complex phrase is producing better comprehension than the simple one (Savage-Rumbaugh, in Lewin, 1991).
- Kanzi showed this level of comprehension when he was nine years old, but not when he was younger than six. He also showed understanding of the syntactic rule that in two-word utterances, action precedes object and, significantly, he went from a random ordering initially to a clear, consistent preference.
- Now well over 20, Kanzi's grammatical comprehension has been officially assessed as exceeding that of a two-and-a-half-year-old child, and he understands about 2000 words. His 15-year-old sister, Panbanisha, has a vocabulary of at least 3000 words, and Nyota, Panbanisha's son, is learning faster than her mother and uncle. It seems that the researchers' expectations were higher for those who came after Kanzi (Cohen, 2000).

According to Savage-Rumbaugh (1990), production-based language training can be said to disrupt the 'normal course' of language acquisition in the ape:

> When the environment is structured in a way that makes it possible for the chimpanzee to acquire language much as does the normal child, by coming to understand what is said to it before it elects to produce utterances, the perspective of language acquisition and function that emerges is very different from that seen by Sherman and Austin.

Kanzi was the first to demonstrate that *observational exposure* is sufficient for the acquisition of lexical and vocal symbols. Three other chimps (two pygmy and one common) have also learned symbols without training (so Kanzi's ability is unique neither to him nor to his species). According to Savage-Rumbaugh (1990), chimps learn where one word ends and the next begins, that is, what the units are, through the learning of routines which emerge out of daily life that has been constructed for the chimpanzees.



Panbanisha and Panzee using the lexigram keyboard

Box 19.11 A day in the life of a chimp exposed to language

- A typical day is like a field-based preschool for apes. Food can be found throughout a 50-acre forest. They have time off for social play with different companions, interesting places to visit, plus time devoted to structured testing, during which the chimps are asked to sit quietly and apply themselves as fully as possible.
- Caretakers' only instructions are to communicate with them much as one would with very young children, except that they must accompany their speech with pointing to lexical symbols.
- They talk about things which are concrete and immediate (such as where they're going, and what just happened to them), and clarify their intent with gestures and actions. 'Conversations' move from topic to topic with the natural flow of the day, and routines include nappy changing, getting ready to go outside, bathing, riding in the car, looking at a book, blowing bubbles, putting things in the backpack, visiting other apes, playing games of tickle, and travelling down various forest trails.

At first, a symbol is understood only within an established routine; later it will be understood and used beyond the routine itself. The driving force that moves the ape from symbol comprehension to symbol production is the desire to exert some control over what happens next (Savage-Rumbaugh, 1990).

ASK YOURSELF...

- Is it ethically acceptable to use chimps and other apes for this kind of research?
- Is it right that they're treated as if they were human when they're not? (See Chapter 48.)

Is language uniquely human?

According to Aitchison (1983), the apparent ease with which children acquire language, compared with apes, supports the suggestion that they're innately programmed to do so. Similarly, although these chimps have grasped some of the rudiments of human language, what they've learned and the speed at which they learn it are *qualitatively different* from those of human beings (Carroll, 1986).

Aitchison and Carroll seem to be talking for a majority of psychologists. However, the criticisms of ape studies and the conclusions that have been drawn from them are based on the production-based studies (as summarised in Table 19.4). Savage-Rumbaugh believes there's only a *quantitative difference* (one of degree) between ape and human language. Responding to criticisms by Terrace that Kanzi still uses his symbols only in order to get things done, to ask for things, rather than to share his perception of the world, Savage-Rumbaugh observes that so do young children. In fact, the predominant symbol use of normal children is 'requesting'.

Kanzi's capacity for comprehension far outstrips his capacity for producing language using the lexigram. This makes him extremely frustrated, at which times he often becomes very vocal, making high-pitched squeaks. Is he trying to speak? If Kanzi were to talk, maybe the first thing he'd say is that he's fed up with Terrace claiming that apes don't have language (Lewin, 1991).

CONCLUSIONS

Many psychologists believe that there's a biologically determined 'timetable' for language development, while others emphasise the role of conditioning. Although the evidence suggests that biologically based accounts are probably closer to the truth, it's unlikely that they offer a complete account of language development. According to Bee (2000):

> The fact that children learn complex and varied use of their native tongue within a few years remains both miraculous and largely mysterious.

For Chapman (2000):

> The study of child language development is at an exciting moment, one in which new advances in research methods and multiple theoretical perspectives – psychological, linguistic, social, cognitive, anthropological, neurobiological – are converging on a new understanding of how children learn to talk. The older debates of the importance of nature vs nurture in explanations of language acquisition are giving way to interactionist perspectives ...

According to Kuczaj & Hill (2003):

> ... A true explanation of language development will require a combination of innate and environmental factors, and so researchers need to look beyond their 'favourite' theories and consider all possible explanations. As this occurs more and more frequently, we will move that much closer to understanding the incredible feats that characterize language development.

As for language being unique to human beings, opinions are still divided. But what's indisputable is that attempts to teach language to non-human primates have raised some fundamental ethical issues. Wise, an American lawyer, argues that bonobos and other chimps deserve basic legal rights. He rejects the idea of human superiority (Cohen, 2000).

CHAPTER SUMMARY

- Language involves the acquisition of a rule system (**grammar/mental grammar**), which consists of **phonology**, **semantics**, and **syntax**.
- During the **prelinguistic stage**, babies make various non-speech sounds including crying and cooing. But **babbling** involves the production of **phonemes**. **Phonemic expansion** is replaced at around 9–10 months by **phonemic contraction.**
- The child's first **words** are often invented and **context-bound**, denoting specific actions, events or objects. They serve less of a communicative function and more of a **performative function**.
- The full meaning of **holophrases** is provided by accompanying gestures and tones of voice. They can be thought of as precursors of later, more complex sentences.
- Language in **stage 1 grammar** is **telegraphic**, consisting of **contentives** but no **functors**, and involving a **rigid word order**. The child's **imitation by reduction** is complemented by the adult's **imitation with expansion**.
- Word order seems to reflect the child's **prelinguistic knowledge**, as claimed by Cromer's **cognition hypothesis**. Similarly, Piaget believes that language development reflects the child's stage of cognitive development.
- In **stage 2 grammar**, sentences become longer and more complex, as measured by the **mean length of utterance** (MLU). MLU increase is due largely to the inclusion of functors missing from stage 1 telegraphic speech.
- Each functor corresponds to a **syntactic rule**. The rule-governed nature of language is also illustrated in children's grammatical mistakes, which often involve the **overgeneralised/over-regularised** application of a rule.
- According to Skinner, verbal behaviour is acquired through **operant conditioning**. Cooing and babbling are **shaped** by adults into words, and selective reinforcement shapes words into grammatically correct sentences.
- Operant conditioning cannot explain the **culturally universal** and **invariant sequence** in the stages of language development. It also fails to explain the **creativity** of language.
- According to Chomsky, children are innately equipped with a **language acquisition device** (LAD), which consists essentially of **transformational grammar** (TG). TG enables us to transform **surface** into **deep structure** and vice versa.
- LAD is used to look for **linguistic universals**, which collectively provide the deep structure. Children can learn any language they're exposed to with equal ease.
- According to **integrative theorists**, children are **active** learners of language whose learning of grammar is based on important already acquired concepts. The **language and social-interaction approach** emphasises children's prelinguistic knowledge.
- The emergence of **communicative intentionality** parallels the use of physical tools, an important feature of Piaget's **sensorimotor intelligence**.
- Early attempts to teach chimps to speak failed because their vocal apparatus is unsuited to making speech sounds. **Production-based training** studies have found that, compared with children, chimps show little spontaneous naming of objects, and they seem to use symbols in a purely **instrumental** way.
- Since the 1980s, Savage-Rumbaugh has been using a **comprehension-based** approach, with Kanzi and other bonobos. This structures the environment in a way that allows the chimp to acquire language through **observational learning**, much like a child, by exposing it to language in the course of daily life routines.
- Data from comprehension-based studies suggest that there's only a **quantitative difference** between ape and human language. Rejection of the claim that chimps are capable of language has arisen from the earlier, production-based studies.

Links with other topics/chapters

- Cromer's cognition hypothesis sees word order in two-word utterances as dependent on the child's prelinguistic knowledge, in particular Piaget's concept of *object permanence* (Chapter 34). This is consistent with Piaget's view of the *relationship between language and thought* (Chapter 18).
- This use of animate tools (other people) in communicative intentionality (second-order causality) parallels the use of inanimate tools (physical objects). This is an important feature of *sensorimotor intelligence,* the first stage in Piaget's theory of cognitive development Chapter 34).
- Skinner's theory of language development is based on the same principles of *operant conditioning* that are applied to all other (*voluntary*) behaviours (Chapters 2, 11 and 49), but he also sees *imitation* as playing an important role, which is more a feature of *social learning theory* (Chapters 35 and 36).
- Some support for Skinner comes from the use of *behaviour modification* to teach language to emotionally disturbed/developmentally delayed children (Chapter 45).

- Language (like perception: Chapter 16) is one of the major arenas for the *nature–nurture debate* in psychology, and Chomsky's LAD represents one of the major *nativist* theories within psychology as a whole – past or present (Chapter 50).
- Attempts to teach language to bonobos and other chimps raise fundamental philosophical, scientific and *ethical* issues (Chapter 48).

The nature of problems
- Stages in problem-solving (PS)
- Classifying problems
  - *Adversary problems*
  - *Non-adversary problems*

Explaining PS
- The Gestalt approach
  - *Functional fixedness*
  - *Mental set*
- The information-processing approach
  - *Algorithms*
  - *Heuristics*
  - *Well-defined and ill-defined problems*
  - *Solving adversary problems: the case of chess*
  - *Experts and domain-specific knowledge*
  - *Expert systems*

Decision-making
- Compensatory and non-compensatory models of DM
  - *Compensatory models*
  - *Non-compensatory models*
- Heuristics in DM
  - *Availability heuristic (or bias)*
  - *Representativeness heuristic (or bias)*
- Gambling and risk-taking

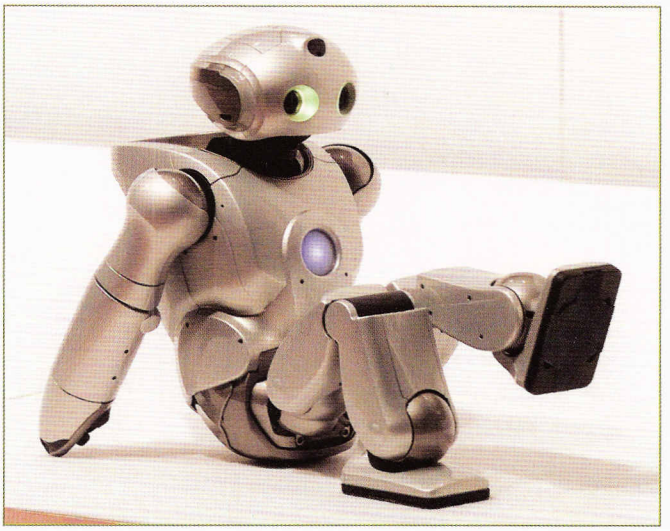
Artificial intelligence (AI)
- Defining AI
- What is a computer?
- Strong and weak AI, and the computational theory of mind
  - *The Chinese room and the Turing test*
  - *The real aims of AI*
  - *Do we need brains to be brainy?*
  - *Can computers ever be like brains?*

Chapter summary

Links with other topics/chapters

20

PROBLEM-SOLVING, DECISION-MAKING AND ARTIFICIAL INTELLIGENCE



INTRODUCTION AND OVERVIEW

The basic cognitive processes we've considered in the previous chapters are all aspects of 'thought'. However, there's more to thinking than perception, attention and language. Two closely related aspects of thinking of interest to cognitive psychologists are *problem-solving* (PS) and *decision-making* (DM). DM is a special case of PS, in which we already know the possible solutions (or options). A problem can be defined as arising whenever a path to a desired goal is blocked.

In another sense:

> ... all thinking involves problem-solving, no matter how simple, immediate and effortless it may appear ... (Boden, 1987a)

A good example of what Boden means is perception. As we noted in Chapter 15, the effortless and (usually) accurate nature of perception suggests that there's no problem-solving involved (no 'vision problem'). But that's not how psychologists – and other researchers – see it. For example, Marr (1982) considered that to understand vision, we must explain how useful information about a scene can be extracted from images of that scene. Specifically, we must define what computations must be performed.

Much of the work of computer simulation and artificial intelligence (AI) has been concerned with PS. If we can create computer programs that will solve 'human' problems, we might understand better how *we* solve them. This research is based on the argument that both computers and human problem-solvers are *information-processing machines* (Greene, 1987).

Significantly, some early research into human PS was going on during the 1920s and 1930s in Germany and elsewhere in Europe, where the impact of American behaviourism was minimal. It wasn't until the mid-1950s that behaviourism's domination of American psychology gave way to cognitive psychology. The new information-processing approach to PS was quite different from early PS research, being largely inspired by computer scientists, including those working within AI.

THE NATURE OF PROBLEMS

Stages in problem-solving (PS)

A problem is a situation in which there's a discrepancy between a present state and some goal state, with no obvious way of reducing it. PS is an attempt to reduce the discrepancy and achieve the goal state, and can be seen as progressing through a series of logical stages (Bourne *et al.*, 1979). These are:

- *defining or representing the problem*
- *generating possible solutions*
- *evaluating possible solutions.*

Some researchers have claimed that there's also an *incubation stage* (in which no attempt is made to solve the problem), which occurs between the generating and evaluating stages.

Classifying problems

Garnham (1988) distinguishes between two broad classes of problem, *adversary* and *non-adversary.*

Adversary problems

Adversary problems involve two or more people pitting their wits against each other, as in chess. Garnham says that game-playing is a special kind of PS, in which the problem is to find a winning strategy or the best current move. The focus of AI research here has been on two-player games, in which each player always has complete information about the state of play, and in which there's no element of chance. Apart from chess, games used include noughts and crosses (tic-tac-toe) and draughts (checkers).

Non-adversary problems

Most problems fall into the *non-adversary* category, in which another person is only involved as the problem setter. Some of the most commonly used include the following.

- **The eight-puzzle**: a 3 × 3 matrix containing the numbers one to eight, with one vacant square, must be moved until the numbers are in order.

5	4	8
7	2	6
3		1

Figure 20.1 The eight-puzzle

- **The missionaries and cannibals** (or '**hobbits and orcs**') **problem**: the three missionaries and three cannibals must be transported across the river in a single boat, which can hold only two people but needs at least one to get it across the river. The cannibals must never outnumber the missionaries on either bank (or they'll be eaten).

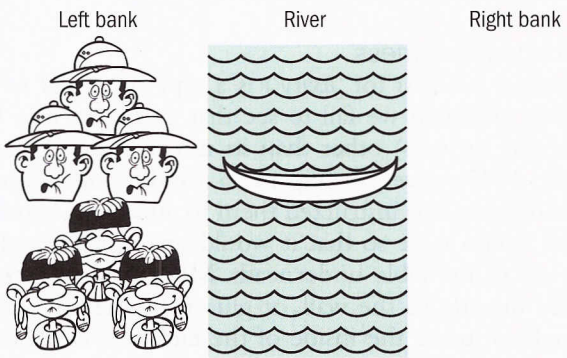


Figure 20.2 The missionaries and cannibals problem

- **The Tower of Hanoi problem**: there are three vertical pegs with four (or more) discs of increasing size stacked on one peg. The problem is to transfer the discs to the second peg, moving only one at a time and never placing a larger disc on top of a smaller one.

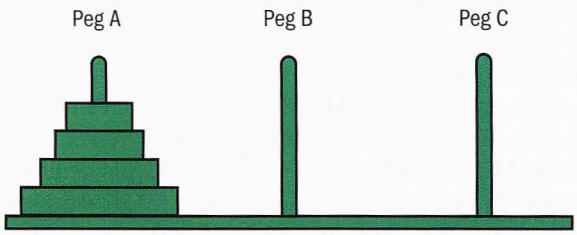


Figure 20.3 The Tower of Hanoi problem

- **Cryptarithmetic** (Bartlett, 1958): given that D = 5 and each letter stands for a digit (0–9), find the digits which make the sum correct.

```
  GERALD
+ DONALD
---------
  ROBERT
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ASK YOURSELF...
- Have a go at solving these puzzles, trying to monitor the *strategies* you adopt as you do so.

EXPLAINING PS

The Gestalt approach

According to *behaviourists,* PS is essentially a matter of *trial-and-error* and *accidental success* (Thorndike, 1911: see Chapter 11). Behaviourists argued that as acquired habits are learned, so PS (essentially a chain of stimulus–response associations) improves. While trial-and-error can be effective in solving some problems, the behaviourist approach was challenged by Gestalt psychologists. Rather than being 'senseless drill and arbitrary associations' (Katona, 1940), Gestalt psychologists saw PS as involving the *perceptual restructuring* of the problem, resulting in *insight* (see Chapter 15).

Functional fixedness

Functional fixedness (or *'fixity'*) is a type of *mental set* (see below), in which we fail to see that an object may have functions (or uses) other than its normal ones. Duncker (1926, 1945) gave participants a candle and a box of drawing pins, and instructed them to attach the candle to a wall over a table so that it would stay upright and not drip on to the table underneath. Most tried to tack the candle directly to the wall, or glue it by melting it. Few thought of using the inside of the tack-box as a candle-holder and tacking that to the wall. Participants were 'fixated' on the box's normal function, and they needed to reconceptualise it (to use *lateral thinking:* de Bono, 1967). Their past experience was leading them away from the solution. When people are shown an empty box and the drawing pins are scattered on a table, the box is much more likely to be used as a candle-holder (Glucksberg & Weisberg, 1966).

Similar is Scheerer's (1963) nine-dot problem (see Figure 20.4). The problem is to draw four continuous straight lines, connecting all the dots, without lifting the pencil from the paper. Most people fail, because they assume that the lines must stay within the square formed by the dots – they 'fixate' on the shape of the dots. (The solution can be found on page 354.)



Figure 20.4 Scheerer's nine-dot problem

Mental set

Mental (or *problem-solving*) *set* is a form of functional fixedness, in which we tend to continue using a previously successful strategy to solve new problems, even when more efficient strategies exist. Luchins (1942) and Luchins & Luchins (1959) asked people to imagine they had three different containers, each of a different size. The task was to use the containers to obtain a specific volume of liquid. Once this problem had been solved, the task was repeated, but participants had to imagine a different set of three containers.

Table 20.1 The water container problems used by Luchins & Luchins (1959)

	Containers with capacity in fluid ounces			Obtain exactly these amounts of water
Problem no.	Container A	Container B	Container C	
1	21	127	3	100
2	14	163	25	99
3	18	43	10	5
4	9	42	6	21
5	20	59	4	31
6	23	49	3	20
7	10	36	7	3

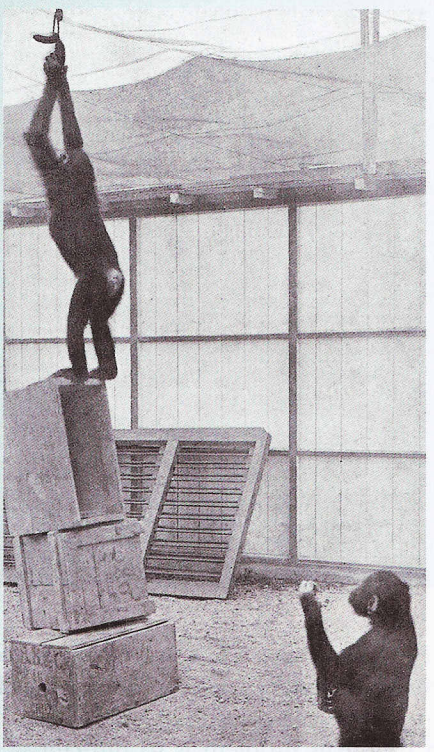
Problems 1–5 can be solved using the formula B–2C–A (that is, fill container B, pour its contents into container C twice, and then pour what remains in container B into container A to leave the desired amount in container B). While problem 6 can also be solved using this formula, there's a more direct solution, namely A–C. Problem 7 *cannot* be solved using the formula B–2C–A, but can be solved using the formula A–C.

Once people discovered a solution to the first problem, they continued to use it even when (in the case of problem 6) it was less efficient, or (in the case of problem 7) it didn't apply. In Gestalt terms, mental set produces *reproductive thinking,* when in fact a problem calls for *productive thinking* (Maier, 1931; Scheerer, 1963). In productive thinking, problems are solved by the principle of *reorganisation,* or solving a problem by perceiving new relationships among its elements.

Consider, for example, trying to arrange six matchsticks into four equilateral triangles with each side equal to one stick. If you try to arrange the matchsticks by pushing them around on a table, the problem cannot be solved. But through reorganisation, and realisation that the matchsticks don't have to be arranged in two dimensions, the problem can be solved (as shown on page 354). The principle of reorganisation is similar to what Köhler (1925) called insight in his studies of PS in chimpanzees.

KEY STUDY 20.1 Sultan and the banana (Köhler, 1925)

- Köhler suspended, out of reach, a bunch of bananas from the ceiling of the cage of a chimpanzee called Sultan. In the cage were several items that could be used to reach the bananas (such as sticks of different lengths), although none on its own was sufficient. Eventually, Sultan solved the problem by placing empty boxes beneath the bananas and climbing on the boxes.



- Later, Köhler allowed Sultan to see a box being placed in the corridor leading to his cage. Sultan was then taken to his cage where, again, bananas were suspended from the ceiling. Sultan's first strategy was to remove a long bolt from the open cage's door. Quite suddenly, though, he stopped, ran down the corridor, and returned with the box which was again used to retrieve the bananas.
- For Köhler, Sultan's behaviour was a result of sudden perceptual reorganisation or insight, which was different from trial-and-error learning.
- Other experiments showed that Sultan's perceptual reorganisation was maintained as a plan of action. So, when the bananas were placed outside the cage, Sultan still built several boxes. Experience can sometimes be an obstacle to PS!

An evaluation of the Gestalt approach

- Gestalt psychologists made a significant contribution to our understanding of the processes involved in solving certain types of problem, but they didn't develop a theory that applies to all aspects of PS.
- The concepts of 'insight' and 'restructuring' are attractive, because they're easily understood (especially when accompanied by perceptual demonstrations). But they're extremely vague and ill-defined as theoretical constructs: it's very unclear under what conditions they occur and exactly what insight involves (Eysenck & Keane, 1995).
- However, in many ways the spirit of Gestalt research, with its emphasis on the goal-directed and non-associationist nature of thinking, provides a basis for the information-processing approach.
- It also left a large body of experimental problems and evidence, which any later theory had to be able to account for; 'the legacy of the school was, therefore, substantial' (Eysenck & Keane, 1995).

The information-processing approach

Information-processing approaches analyse cognitive processes in terms of a series of separate stages. In the case of PS, the stages are those mentioned earlier; that is, representing the problem, generating possible solutions, and evaluating those solutions.

Algorithms

An *algorithm* is a systematic exploration of every possible solution until the correct one is found. For example, to solve the anagram YABB, we could list all the possible combinations of letters, checking each time to see whether the result is a real word. So, we might generate BBAY (non-word), BYAB (non-word) and so on, until we eventually arrive at BABY. Algorithms guarantee a solution to a problem, and are effective when the number of possible solutions is small (as in the above example). But when there's a very large number of possible solutions, algorithms are time-consuming (unless we're fortunate enough to find the solution early).

Heuristics are 'rules of thumb':

> ... guidelines for selecting actions that are most likely to lead a solver towards a goal, but may not always do so. (Greene, 1987)

So, while not guaranteeing a solution to a problem, heuristics can result in solutions being reached more quickly (Newell *et al.*, 1958). These 'fuzzy' procedures are based on intuition, past experience, and any other relevant information. With solving anagrams, for example, a heuristic approach would involve looking for letter combinations that are/are not permitted in the English language. BB isn't a permitted combination of letters at the beginning of a word, and so this would immediately exclude BBAY as a solution to the example above. Although less likely with four-letter anagrams, heuristic devices applied to longer anagrams might not be successful, and we might miss a solution based on a lack of intuition, past experience, and other relevant factors. Heuristic devices include *means–end analysis* (Newell & Simon, 1972).

Means–end analysis (MEA)

In *MEA* (or *working backwards*), the search for a solution begins at the goal (or end) and works backwards to the original state (the means being the steps that must be taken to get from the present state – the problem – to the goal of solving the problem).

However, it's often not possible to achieve the main goal all in one step. So, another important characteristic of MEA is to break down the main goal into sub-goals (or a problem into subproblems), each of which has to be solved before the final (main) goal can be reached.

ASK YOURSELF...

- Try to think of some examples of real-life/everyday problems that can be achieved only by being broken down into sub-goals.

This form of MEA is called *problem-reduction representation* (a 'divide and conquer' approach: Garnham, 1991). As each of the sub-problems is solved, so the distance between the original state and the goal state decreases (Newell & Simon, 1972).

For example, in the Tower of Hanoi (see pages 339–340), the overall goal is to move four discs from A to B, moving one disc at a time and never placing a larger disc on top of a smaller one. This overall goal can be subdivided into three sub-goals:

1. transfer the three smaller discs from A to C
2. transfer the largest disc from A to B
3. transfer the three smaller discs from C to B.

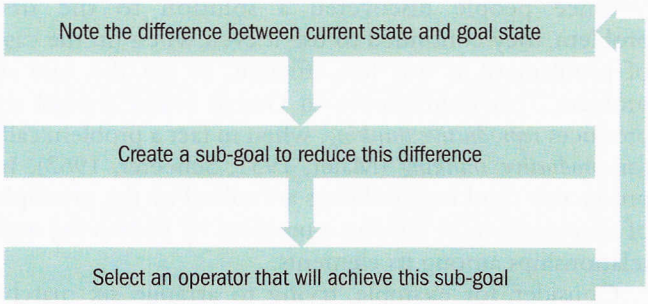


Figure 20.5 Outline of major steps involved in subgoal MEA

(1) and (3) can be reduced further. (2) can be achieved directly, assuming that (1) has been achieved. Complete reduction analyses the problem into moves of single discs whose preconditions are met; they correspond to the rules (*control strategies*) about moving only one disc at a time and only smaller discs being placed on a larger one (not vice versa). But is it always this clear just what the sub-goals are?

Box 20.1 Limitations of MEA

- The missionaries and cannibals problem is a good example of how the final goal may be obvious enough, while the subgoals may be far less obvious.
- Indeed, many puzzles are chosen for experiments precisely because the basis for selecting the shortest set of moves to reach the final goal is obscure. So how do you measure progress towards the final goal in such problems?
- It cannot be measured simply by the total number of people transported from the left to the right, because if there are too many cannibals the missionaries will get eaten!
- While it's possible for a computer to work out a sequence of all possible moves and then to plot the quickest path of moves towards a solution, people cannot hold this type of structure in their limited-capacity working memories (see Chapter 17).
- The water-jug problem poses the same difficulties for human solvers. (If a computer program systematically checked every possible move until the goal were reached, it would be using a 'check-every-move' algorithm.)

A further problem with MEA as a heuristic for PS is that it's sometimes necessary to move *further away* from a goal in order to achieve a solution. One reason the missionaries and cannibals problem is so difficult is that at one point it becomes necessary to take a missionary and a cannibal back to the left bank from where they started. This apparently increases the distance from the final goal of getting them all over to the right bank (Greene, 1987).

Well-defined and ill-defined problems

Garnham (1988) believes that in everyday problems, and those requiring a high degree of creative thinking, one or more of: (i) the initial state; (ii) the goal state; or (iii) the operators are typically *ill-defined* (not made explicit). This makes it difficult to write AI programs designed to solve such problems. But in the missionaries and cannibals problem, Tower of Hanoi, and other puzzle problems, all three are clearly specified (they're *well-defined* problems) and AI programs are relatively successful in solving them. According to Greene (1987), there are two major differences between puzzle problems and real-life problems.

1. Puzzle problems are unfamiliar problems about which the solver has little knowledge, whereas many everyday problems require considerable amounts of knowledge. The knowledge which is relevant in puzzle problems is called *general-purpose* (or *domain-independent heuristic*) knowledge. For example, MEA can be applied in a wide range of different situations (domains). By contrast, everyday problems require substantial *domain-specific* knowledge. Substantial domain-specific knowledge is also required in adversary problems, such as chess (see below).
2. The knowledge required to solve puzzles is present in the statement of the problem, whereas much of the difficulty with everyday problems is finding the relevant information needed to solve them.

Solving adversary problems: the case of chess

According to Ginsberg (1998):

> The world watched with considerable amazement in May 1997 as IBM's chess computer, Deep Blue, beat Garry Kasparov, the world champion, in a six-game match. With a machine's victory in this most cerebral of games, it seemed that a line had been crossed, that our measurements of ourselves might need tailoring.

However, the contest was very close (two wins, one defeat and three ties), and Kasparov clearly wasn't on top form. Although Deep Blue and other recent chess-playing programs generally play well, Ginsberg observes that:

> As an element of artificial intelligence, game-playing software highlights the key differences between the brute-force calculation of machines and the often intuitive, pattern-matching abilities of humans.

The number of possible sequences of moves in a game of chess is frighteningly large (there are an estimated 10^{20} possible games of chess, compared with a mere 10^{12} microseconds per century: Garnham, 1988). Human players will consider tens (or perhaps hundreds) of positions when selecting a move, which represents a tiny fraction of the potential moves, and only rarely can they think through to a win, lose or stalemate situation. Chess-playing computer programs used to be like human players. They selected a small number of moves to follow up, then used the *minimax procedure* (*minimising* the *maximum* loss that can be inflicted by the opponent) to analyse these in detail. Programs run on small computers still operate in this way.

But top programmers have access to the most powerful machines available, and they often revert to a more algorithmic method; for example, examining every possible position that can be reached in the next five moves by each player (which involves comparing hundreds of thousands of positions). While modern computers can perform many millions of operations per second (through 'brute-force' methods), this provides few insights for cognitive scientists, since it bears no relationship to the way that people solve difficult problems (Garnham, 1991).

Box 20.2 Key differences between human and computer chess masters

- Considering the far superior computational capacity of computers, it might seem unlikely that humans could ever win. But although people look at a mere handful of successive positions, they tend to look at the right handful. They identify the best positions to consider through *pattern matching* (or PR: see Chapter 14). Chess experts compare a given board position with the vast number of such positions they've seen during their career, using lessons learned from analysing those other positions to identify good moves in the current game. For Deep Blue, however, there are no pre-existing lists of positions it can use to evaluate the current game. As Boden (1987b) puts it:

  Master chess players develop global perceptual schemata in terms of which they can see threats and oppositions on the board much as a lesser mortal can see complex emotional response in a cartoon face ...

- Pattern matching is a *parallel process*, while the computer's capacity for searching through vast numbers of possibilities is a *serial process*. Since the brain is a massively parallel structure, it's far superior to computers at recognising patterns.

According to Boden (1987b):

> Like problem-solving in other ... domains ... chess playing needs more than quick thinking and a retentive memory: it requires an appreciation of the overall structure of the problem, so that intelligent action can be economically planned ...

De Groot (1965, 1966) compared the performance of five grand masters and five expert players on choosing a move from a particular board position. He asked participants to think aloud, and then determined the number and type of different moves they'd considered. Grand

masters didn't consider more alternative moves or search any deeper than experts, and yet they took slightly less time to make a move. Independent raters judged the final moves of the masters to be superior to those of the experts.

De Groot's initial explanation for these differences was in terms of knowledge of different board positions stored in LTM. When participants were given a five-second presentation of board positions from actual games and asked to reconstruct them from memory, the masters were correct 91 per cent of the time compared with 41 per cent for the experts. Clearly, the masters could recognise and encode the various configurations of pieces using prior knowledge. When pieces were *randomly* arranged on the board, both groups did equally badly.



Chess experts are only better at remembering the position of chess pieces when they're positioned as they might be during a game. If the pieces are placed randomly, the experts are no better than non-experts at memorising their positions (de Groot, 1966)

Experts and domain-specific knowledge

According to Sternberg (1990):

> ... intelligent systems rely to a great extent on stored problem patterns when they face a familiar task. Instead of creating solutions from scratch for every problem situation, they make use of previously stored information in such a way that it facilitates their coping with the current problem.

Studies of experts and novices have revealed many important differences between them. These don't necessarily occur because experts are faster thinkers, have better memories, or are cleverer than non-experts (Hampson & Morris, 1996). The gain from being an expert seems to be that it places less strain on *working memory* (see Chapter 17). Since PS strategies depend on knowledge which is already available, 'the more you know, the less you have to think' (Greene, 1987).

According to Greene (1987), what's missing from AI accounts of human PS are the different experiences people bring to different tasks. For example, MEA is meant to be typical of all PS by all problem-solvers. It was originally presented as a general characteristic of human thinking which can, in principle, be applied to any problem. However, the ability to implement a particular PS strategy depends on knowledge. Thinking mechanisms may be universal, but solvers are categorised as experts or novices in relation to different problem situations. Expertise is more far-reaching than simple knowledge of the rules which apply to a particular problem (otherwise we'd all be chess masters!).

Expert systems

Expert systems (ESs or *intelligent knowledge-based systems*) promise to be the first major application of AI research (Garnham, 1991). Basically, an ES is a computer program that embodies (some of) the knowledge of a human expert in a domain in which expertise comes with experience (Garnham, 1988).

In fields such as medicine, it's difficult to formulate an expert's knowledge explicitly – otherwise human experts would be easier to train. ESs are intended to do (some of) the work of human experts. So, for a problem to be tackled by an ES, there must first be recognised experts in solving it, and their performance should be demonstrably better than that of non-experts (e.g. a medical consultant compared with both the layperson and non-specialist GPs). The case of medical diagnosis illustrates certain other features a problem should have.

- There's no simple set of rules a medical expert can follow in diagnosing illness. If there were, diagnosis could be performed by non-intelligent programs (and there would probably be no experts). Instead, consultants draw on wide experience of the connection between manifestations of illnesses and underlying causes.
- A single manifestation (symptom, sign, test result) may indicate one of a number of different diseases, but it's unlikely to be associated with any one of them in every case. Further, some of the data that diagnosis is based on may be misleading, irrelevant or incorrect: reasoning about diagnosis is, in some sense, *probabilistic* (it's never *certain*).
- Diagnosis doesn't depend on general knowledge, but requires a large but manageable amount of domain-specific knowledge.

Apart from the primary goal of solving domain-specific problems (e.g. medical diagnosis), ESs should be able to explain how they reached a particular conclusion. They usually interact with people in solving problems, and those users often need to know how a decision has been reached.

How is ES knowledge obtained?

The process of encoding knowledge into the system is called *transfer of expertise.* However, experts cannot always formulate explicitly the knowledge they use, nor can they say how they combine different items of information to make a judgement about a particular case. Lengthy interviews may need to be conducted, in which experts are asked to give their opinions on sample cases. These data may have to be supplemented by survey data, such as correlating patterns of medical symptoms and test results with eventual diagnosis. This makes the writing of ESs difficult and time-consuming.

Box 20.3 Some examples of ESs – MYCIN and GUESSING

- MYCIN diagnoses bacterial infections requiring antibiotics, and is intended for use in situations where drugs must be prescribed before the micro-organism responsible for the infection has been properly identified (a laboratory culture may take up to two days to grow).
- A chronically sick patient needs earlier treatment, so drugs have to be prescribed on the basis of symptoms and the results of quick tests. MYCIN interacts with a medical expert, requesting information and suggesting treatments. It asks specific questions related only to the hypothesis it's currently considering.
- While ESs have now been used in medicine for over 30 years, they've only fairly recently appeared in nursing. One example is the Glasgow University Expert Systems in Nursing Group (GUESSING), which has designed experiments to discover the cognitive skills of clinically excellent nurses in the area of pressure sore risk and preventative care planning. These were then formalised into a computer program, which can be used both as a decision support and a tutoring tool (Jones *et al.*, 1989, in Eaton, 1991).

An evaluation of ESs

According to Boden (1987a), ESs are much less flexible than their human counterparts and most in actual use are considerably less complex than MYCIN, which was one of the prototypes and took many work-years to create. In Boden's view:

> In almost every case, their 'explanations' are merely recapitulations of the previous firing of if–then rules ... for they still have no higher-level representations of the knowledge domain, their own problem-solving activity, or the knowledge of their human user.

Some researchers are trying to provide ESs with causal reasoning, so that they not only arrive at a conclusion but can also explain the reason to the user. Boden claims that ESs cannot integrate knowledge from distinct domains, using concepts and patterns of inference from one domain to reason (by analogy) in another. Genuine expertise requires both high-level knowledge and *analogical thinking.*

DECISION-MAKING

Decision-making (DM) is a special case of PS, in which we already know the possible solutions (or choices). Some decisions we have to make are relatively trivial. Others are more important, such as deciding which university to study at, or whether or not to have children. In DM, then, we're faced with various alternative choices from which one must be selected and the others rejected.

ASK YOURSELF...

- Think of a situation in which you had to choose between various options (e.g. which college or university to go to, or which subjects to study).
- How did you make your decision?

Compensatory and non-compensatory models of DM

Compensatory models

If we were completely logical in our DM, we'd evaluate how *all* the desirable potential outcomes of a particular decision might compensate for all the undesirable potential outcomes. According to the *additive compensatory model,* we start the DM process by listing common features of various alternatives, and assigning arbitrary weights that reflect their value to us. The weights are then added up to arrive at a separate score for each alternative. Provided the criteria have been properly weighted and each criterion has been correctly rated, the alternative with the highest score is the most rational choice given the available information.

Another compensatory model is the *utility–probability model.* This proposes that important decisions are made by weighting the desirability of each potential outcome according to its *utility* (the value placed on potential positive or negative outcomes) and *probability* (the likelihood that the choice will actually produce the potential outcome).

Non-compensatory models

Evidence suggests that we actually use various, and less precise, non-compensatory models. In these, we may not consider every feature of each alternative, and features don't compensate for each other. There are at least four such models.

Box 20.4 Some non-compensatory DM models

Elimination by aspects: When faced with complex decisions, we eliminate various options if they don't meet particular criteria, irrespective of their quality on other criteria (Tversky, 1972). This assumes that we begin with a maximum criterion and use it to test the various options. If, after applying this criterion, more than one alternative remains, the second most important criterion is used. The procedure continues until just one option remains. This is the chosen option.

Maximax strategy: After comparing the various options according to their best features, we then select the one with the strongest best feature.
Minimax strategy: After considering the weakest feature of each option, we select the option whose weakest feature is most highly rated.
Conjunctive strategy: This involves setting a 'minimum' acceptable value on each option. The next step is to discard any option which doesn't meet, or exceed, this value as the criteria are considered from most to least important. The chosen option is the one that meets or exceeds the minimum acceptable value on each criterion.

Heuristics in DM

Clearly, important decisions should be approached rationally and systematically. But it's not always easy to make rational decisions, even in important matters, because of the absence of information about the various alternatives. Moreover, with all the decisions we have to make daily, there isn't time to engage in the rational processes described above. We also have only a limited capacity for reasoning according to formal logic and probability theory (Evans & Over, 1996). As a result, we often rely on heuristics. Two of these are the *availability heuristic* (or *bias*) and the *representativeness heuristic* (or *bias:* Tversky & Kahneman, 1973).

Availability heuristic (or bias)

Sometimes, decisions must be made on the basis of whatever information is most readily available in LTM. The availability heuristic is based on the assumption that an event's probability is directly related to the frequency with which it's occurred in the past, and that more frequent events are usually easier to remember than less frequent events.



A statistically very rare – but newsworthy – event

ASK YOURSELF...

- Does the letter K appear more often as the *first* letter of a word or as the *third* letter?

Most people say the former. In fact, 'K' is three times more likely to appear as the third letter, but because words beginning with 'K' come to mind more easily, we assume they're more commonplace (Hastie & Park, 1986).

The availability heuristic also plays a role in our tendency to overestimate the chances of being the victim of a violent crime or a plane crash (Tyler & Cook, 1984). This is because the extensive media coverage of these statistically very rare events brings vivid examples of them to mind very readily.

Representativeness heuristic (or bias)

ASK YOURSELF...

Steve is very shy and withdrawn, invariably helpful, but with little interest in people, or in the world of reality. A meek and tidy soul, he has a need for order and structure, and a passion for detail.

- Try to guess Steve's occupation: is he a musician, pilot, physician, salesman or librarian?
- Why did you choose that one?

Tversky & Kahneman (1973) found that most of their participants chose librarian, presumably because his personality characteristics matched certain *stereotypes* of librarians (see Chapter 22, pages 384–389). Whenever we judge the likelihood of something by intuitively comparing it with our preconceived ideas of a few characteristics we believe represent a category, we're using the representativeness heuristic. It can also explain the *gambler's fallacy* (see Box 20.5) and the *base rate fallacy.*

Box 20.5 The gambler's fallacy

ASK YOURSELF...

- Consider the following possible outcomes of tossing a coin six times:
  HHHHHH, TTTHHH and HTTHTH.
- Which of these is the *least*, and which the *most*, likely?

- Most people believe the *first* outcome is the *least* likely of the three, and the *third* the *most* likely.
- In fact, the probability of the three sequences is *identical*.
- Our assumption that coin tossing produces a random sequence of heads and tails leads us to decide that the third is the most likely (it looks the most random).

· Indeed, if people observe five consecutive heads, and are then asked to estimate the probability of the next toss being a head, they tend to say that a *tail* is the more likely outcome – even though the probability of *either* heads *or* tails is actually 0.5! This tendency is called the *gambler's fallacy*.

In the *base rate fallacy,* we ignore important information about base rates (the relative frequency of different objects/events in the world). For example, Tversky & Kahneman (1973) asked participants to decide whether a student who could be described as 'neat and tidy', 'dull and mechanical' and 'a poor writer' was a computer-science student or a humanities student. Over 95 per cent decided the student studied computing. Even after they were told that over 80 per cent of students at their school were studying humanities, their estimates remained virtually unchanged. So, even when we know the relative frequency of two things, we tend to ignore this information and base a decision on how well something matches our stereotype; that is, how representative it is.

However, if prior odds are the only relevant information (base rates without the description of the student), then participants will estimate correctly. People may also be more inclined to take account of base rate information when it seems to be *causally* relevant (Tversky & Kahneman, 1980).

Box 20.6 Some other influences on DM

Belief perseverance: This is the tendency to cling to a belief even in the face of contrary evidence (Lord *et al.*, 1979). It can be overcome by considering the *opposite*. But some false beliefs, such as stereotypes, are difficult to remove even when information exists which clearly discredits them.

Entrapment: When we make costly investments in something that goes wrong (such as a relationship: see Chapter 28), we may come to feel we've no choice but to continue, because withdrawal cannot justify the costs already incurred (Brockner & Rubin, 1985). For example, industrial disputes often continue beyond the stage where either side can hope to achieve any gains (Baron, 1989).

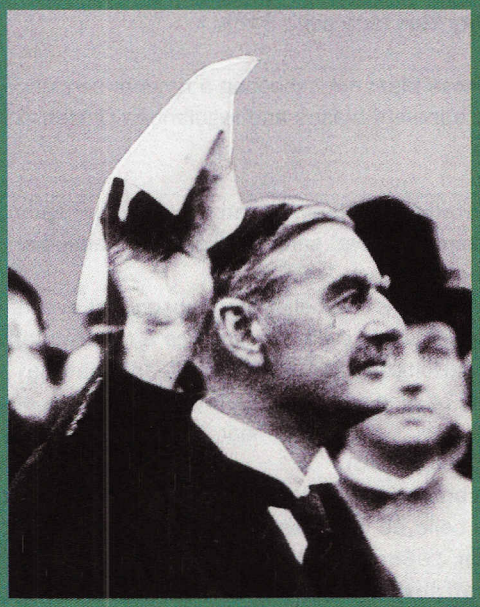
Over-confidence: This is the tendency to overestimate the accuracy of our current knowledge, because it's generally easier for us to remember successful decisions or judgements than unsuccessful ones. So, using the availability heuristic, we overestimate our success at particular tasks. Over-confidence can be overcome by providing feedback about the accuracy of decisions and judgements.

Loss aversion and costs against losses: Typically, we tend to reject riskier, though potentially more rewarding, decisions in favour of a certain gain unless taking a risk is a way to avoid loss (Tversky & Kahneman, 1986). We also tend to see losses as being more acceptable if we label them as 'costs' rather than 'losses' (although the evaluation of a cost depends on the context: Kahneman & Tversky, 1984).

Expectations: Expectations can affect both our perception of the world (see Box 15.4, page 256) and what's done with the perceived information. For example, the shooting down of an ascending Iranian airliner by an American warship occurred as a result of initial, but later corrected, computer information that the plane was a descending F14 fighter jet. The expectation of an attack led the ship's captain to pay more attention to his crew's reports of an emergency than to the new computer information (Wade & Tavris, 1993).

Hindsight: *Hindsight bias* refers to our tendency, in retrospect, to overestimate the probability that something would have happened, as if we'd known this all along (Hawkins & Hastie, 1990).

Framing: When the same issue is presented (or framed) in two different but equivalent ways, we tend to make different judgements about it. For example, people respond more positively to minced beef if it's described as '75 per cent lean' rather than '25 per cent fat'. Also, medical treatments are seen as being more successful if framed as having a '50 per cent success rate' rather than a '50 per cent failure rate' (Levin & Gaeth, 1988: see Chapter 12 page 196).



Neville Chamberlain, the British Prime Minister, returned home in September 1938 from seeing Hitler in Munich with a pledge of non-aggression. He over-confidently declared 'I believe it is peace in our time'

Gambling and risk-taking

Many laboratory studies have used gambling as a model of risk-taking behaviour, despite the fact that it isn't

typical of the risks we take in everyday life (Jones, 1998). However, the heuristics discussed above (which are based largely on laboratory studies) can help explain an increasingly common case of real-life gambling, namely, playing the National Lottery. Although the odds against winning the jackpot are 14 million to one (far greater than any other form of average gambling return), 90 per cent of the population are estimated to have bought at least one ticket, and 65 per cent claim to play regularly (Hill & Williamson, 1998). Given these odds, it's likely that the ordinary 'social gambler' doesn't think about the actual probability of winning, but relies on heuristic strategies for handling the available information (Griffiths, 1997b).

The fact that there are so many heuristics and biases, and that several can be applied to any one particular situation, gives them little predictive value (Griffiths, 1997b; Wagenaar, 1988). However, the availability bias, illusory correlations, and illusion of control can help explain the persistence of gambling (Griffiths, 1997b; Hill & Williamson, 1998). Uncovering the false beliefs underlying people's mistakes when becoming involved in a risk situation can help to reduce the irrational thinking of a potential gambler (Griffiths, 1990; Walker, 1992).

ASK YOURSELF...

- Try to relate these heuristics and biases to explanations of risky *health* behaviours (see Chapter 12) and *addictive* behaviours (see Chapter 8).

ARTIFICIAL INTELLIGENCE (AI)

Throughout the chapter so far, we've talked about computers as problem-solvers and have looked at some of the important differences between them and human problem-solvers. Also, we've discussed mainly puzzle problems. But what about the kind of 'problem' referred to in the *Introduction and overview,* such as vision and language understanding, which humans are 'designed' for? Can computers be programmed to mimic these basic human abilities and, if so, what can we learn about the way we use them?

Defining AI

According to Garnham (1988), AI is 'the science of thinking machines' and, again:

Table 20.2 Heuristic strategies and biases that might be used by lottery players

Heuristic	Application to lottery participation
Availability bias (see page 346)	Wide publicity concerning winners, and pleasant memories of an occasional small prize, make winning more salient than losing
Randomness bias: not expecting a random sequence to have any apparent biases and regularities (Teigen, 1994)	Despite the mechanical and random nature of the draw, many people seem to be trying to predict which numbers will be drawn (Haigh, 1995). So, there's difficulty in choosing six random numbers from 49
Representativeness bias: equating a 'random' sample with a 'representative' sample (Tversky & Kahneman, 1971; see also page 346)	A tendency to choose numbers that appear 'random' (irregular, no pattern), and avoid those which appear less random (adjacent numbers and repeating digits)
Gambler's fallacy: the belief that subsequent events will cancel out previous events to produce a representative sequence (Holtgraves & Skeel, 1992), and that the probability of winning will increase with the length of an ongoing run of losses (Wagenaar, 1988: see also Box 20.5, page 346)	Choosing numbers which have been least drawn (they're therefore 'due'), and overestimating the chances of winning
Illusory correlations: the use of superstitious behaviour when it's believed variables correlate when they don't (Wagenaar, 1988: see also Chapter 22, page 388)	Choosing 'lucky numbers' – birthdays, house numbers etc. – which causes players to discard statistical probabilities
Flexible attribution: tendency to attribute success to personal skill and failures to some external influence (Wagenaar, 1988: see Chapter 23)	Preference for choosing own numbers rather than buying 'lucky dips', so that any win is due to player's own skill (game of luck), whereas losses are due to features of the game (game of chance)
Illusion of control: an expectancy of success which is greater than the objective probability warrants (Langer, 1975)	Being able to choose own numbers induces skill orientations, which cause players to feel inappropriately confident
Sunk cost bias: continuing an endeavour once an investment has been made (Arkes & Blumer, 1985)	Continuing to buy lottery tickets while experiencing losses. The more money that's spent, the more likely people are to continue 'investing', and to inflate their estimations of winning

(Based on Griffiths, 1997b, and Hill & Williamson, 1998)

... an approach to understanding behaviour based on the assumption that intelligence can best be analysed by trying to reproduce it. In practice, reproduction means simulation by computer. AI is, therefore, part of computer science ...

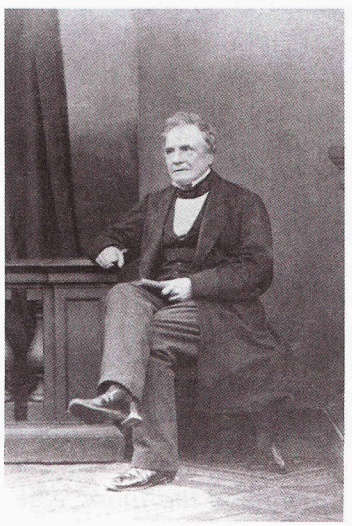
Garnham observes that most contemporary AI research is influenced more or less by consideration of how people behave. Very few researchers simply try to build clever machines disregarding the principles underlying its behaviour, and many still have the explicit goal of writing a program which works in the way people do (such as Marr's computational theory of vision: see Chapter 15). So, cognitive psychologists and workers in AI share an interest in the scientific understanding of cognitive abilities.

Abilities such as vision, language, PS, and DM are all part of 'intelligence' in the broadest sense of that term, and intelligence has always been a central concern of psychologists (see Chapters 34 and 41). As we saw in Chapter 1, since the late 1970s cognitive psychology and AI have both become component disciplines of cognitive science. By the late 1970s, cognitive psychologists had more in common with AI researchers than with other psychologists, and AI researchers had more in common with cognitive psychologists than with other computer scientists (Garnham, 1988).

Boden (1987b) defines AI as '... the science of making machines do the sorts of things that are done by human minds ...'. The 'machines' in question are, typically, digital computers. But she's at pains to make clear that AI isn't the study of computers but the study of intelligence in thought and action. Computers are its tools, because its theories are expressed as computer programs which are tested by being run on a machine.

What is a computer?

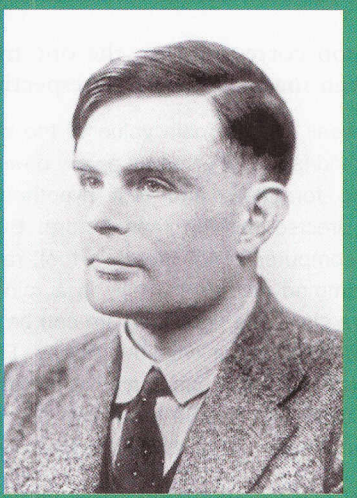
The initial concept of the 'computer', and the first attempts to build the modern digital computer, were made by the Cambridge mathematician, Charles Babbage (1792–1871).



Charles Babbage (1792–1871)

Box 20.7 Turing machines

- Turing (1936) described an abstract computing device (a Turing machine), which performs its calculations with the help of a tape divided into squares, each with a symbol printed on it.
- Its basic operations comprise reading and writing symbols on the tape and shifting the tape to the left or right. It uses a finite vocabulary of symbols, but the tape is indefinitely long.
- A *universal Turing machine* can mimic the operation of any other Turing machine. To do this, it must be given a description of how that machine works, which can be written on to its tape in standard Turing machine format.
- Every general-purpose digital computer is an approximation to the universal Turing machine (since no real machine has an indefinitely large memory). When it runs a program, it behaves as if it were a machine for performing just the task the program performs.



Alan Turing (1912–1954)

A digital computer's memory consists of chips (silicon wafers with transistors engraved on them), which store data in the form of a *binary code* – that is, each unit can exist in one of two states (on/off, represented by the symbols 0/1) (Rose, 2003). These two states can symbolise an indefinitely large number of things (as can the 26 letters of the alphabet), because they can be grouped together in indefinitely numerous ways. As described by Turing, they are machines that change according to the problem to be solved (based on the particular instructions contained within the program). 'Digital' refers to the finger, and the fingers can be used as a kind of abacus, a simple form of computing machine. Computers are, in essence, *autonomous abaci* – working without continuous human intervention (Gregory, 1981).

Although originally designed as calculating machines ('compute' means to 'calculate'), computers aren't mere 'number crunchers' or supercalculating arithmetic machines. Digital computers are, in fact, *general-purpose symbol manipulating machines.* It's up to the programmer to decide what interpretations can sensibly (consistently) be made of the symbols of machine and programming languages, which, in themselves, are meaningless (Boden, 1987a).

Strong and weak AI, and the computational theory of mind

ASK YOURSELF...

- Do you believe that computers literally think/behave intelligently (that is, are *reproducing/duplicating* the equivalent human thinking/behaviour) or are they merely *simulating* (mimicking) human thought/intelligence?

This distinction corresponds to the one made by Searle (1980) between *strong* and *weak* AI, respectively:

> According to weak AI, the main value of the computer in the study of the mind is that it gives us a very powerful tool, e.g. it enables us to formulate and test hypotheses in a more rigorous and precise fashion than before. But according to strong AI the computer is not merely a tool; rather, the appropriately programmed computer really is a mind in the sense that computers given the right program can be literally said to understand and have other cognitive states. Further, because the programmed computer has cognitive states, the programs are not mere tools that enable us to test psychological explanations but the programs are themselves explanations ...

Searle is very critical of strong AI, a view advocated by computer scientists such as Minsky (1975), who defines AI as '... the science of making machines do things that would require intelligence if done by men'. The implication of such a definition is that machines must be intelligent if they can do what humans can do (although this rather begs the question as to what it means to display intelligence). Underlying strong AI is the *computational theory of mind* (CTM), one supporter of whom is Boden (1987a):

> Intelligence may be defined as the ability creatively to manipulate symbols, or process information, given the requirements of the task in hand. If the task is mathematical, then numerical information may need to be processed. But if the task is non-numerical (or 'semantic') in nature ... then the information that is coded and processed must be semantic information, irrespective of the superficial form of the symbols used in the information code ...

Symbols have no inherent similarity to what they symbolise, and represent something in a purely formal way. Computer programs comprise formal systems, 'a set of basic elements or pieces and a set of rules for forming and transforming the elements or pieces' (Flanagan, 1984). In computer languages, symbols stand for whatever objects, relations or processes we wish. The computer manipulates the symbols, not their meaning. Programs consist of rules for manipulating symbols, and don't refer to anything in the world.

However, CTM defines all intelligent systems as symbol manipulators which, of course, include human minds. If symbols are meaningless to a computer, it follows that they're also meaningless to a human mind. But in that case, what's the 'meaning' which, according to Boden, the human programmer attaches to the meaningless symbols? Searle's attack on strong AI and CTM takes the form of a *Gedanken* experiment ('thought experiment') called the Chinese room.

Box 20.8 The Chinese room (Searle, 1980)

- Suppose that I am locked in a room and am given a large batch of Chinese writing. Suppose that I know no Chinese, either written or spoken ...
- After this first batch of Chinese writing, I am given a second batch together with a set of rules for correlating the second batch with the first batch. The rules are in English and I understand them as well as any other English native speaker. They enable me to correlate one set of formal symbols with another set of formal symbols and all that 'formal' means here is that I can identify the symbols entirely by their shapes.
- I am then given a third batch of Chinese symbols together with some instructions, again in English, which enable me to correlate elements of this third batch with the first two batches and these rules instruct me how to give back certain Chinese symbols with certain sorts of shapes in response to certain sorts of shapes provided by the third batch.
- Unknown to me, the people giving me all these symbols call the first batch a 'script', the second batch a 'story', the third batch 'questions', the symbols I give back in response to the third batch, 'answers to the questions' and the set of English rules 'the program' ...
- After a while I get so good at following the instructions for manipulating the Chinese symbols and the programmers get so good at writing the program that, from the point of view of somebody outside the room, my answers are indistinguishable from those of native Chinese speakers ... However ... I am manipulating uninterpreted formal symbols and in this respect I am simply behaving like a computer, i.e. performing computational operations on formally specified elements ... I am simply a realisation of the computer program.

The Chinese room and the Turing test

Searle believes the Chinese room demonstrates quite conclusively that there's more to intelligence and under-

standing than mere manipulation of symbols. In particular, he's trying to show that the *Turing test* (or *imitation game*) isn't the ultimate test of machine intelligence that supporters of strong AI have traditionally claimed it is.

Box 20.9 The Turing test (Turing, 1950)

- Turing suggested that a suitable test for success in AI would be an 'imitation game', in which a human judge would hold a three-way conversation with a computer and another human, and try to tell them apart.
- The judge would be free to turn the conversation to any topic, and the successful machine would be able to chat about it as convincingly as the human.
- This would require the machine participant to understand language and conversational conventions, and to have a general ability to reason.
- If the judge couldn't tell the difference after some reasonable amount of time, the machine would pass the test: it would seem human to a human.

I believe that in about 50 years time it will be possible to program computers ... to make them play the imitation game so well that, on average, the interrogator will not have more than a 70 per cent chance of making the right identification after five minutes of questioning. When this occurs, there is no contradiction in the idea of thinking machines. (Turing, 1950)

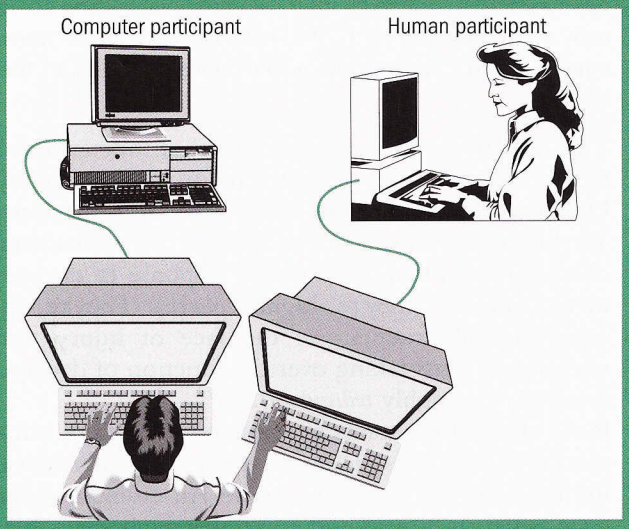


Figure 20.6 The Turing test for artificial intelligence

Both the Chinese room and the Turing test have been criticised. Gregory (1987b) argues that, because it's such a highly restricted and artificial environment:

> The Chinese room parable does not show that computer-based robots cannot be as intelligent as we are – because we wouldn't be intelligent from this school either.

Boden (1993) contends that a functioning program is comparable to Searle-in-the-Chinese-room's understanding of English (not Chinese). A word in a language one understands is a mini-program, which causes certain processes to be run in one's mind. Clearly, this doesn't happen with the Chinese words, because Searle-in-the-Chinese-room doesn't understand Chinese.

The real aims of AI

According to Ford & Hayes (1998), the central defect of the Turing test is that it is *species-centred*. In other words, it assumes that human thought is the ultimate, highest form of thinking against which all others must be judged. Most contemporary AI researchers explicitly reject the goal of the Turing test. Instead, Ford and Hayes maintain that:

> The scientific aim of AI research is to understand intelligence as computation, and its engineering aim is to build machines that surpass or extend human mental abilities in some useful way. Trying to imitate a human conversation (however 'intellectual' it may be) contributes little to either ambition.

Ford and Hayes draw an analogy between AI and artificial flight. They argue that the traditional view of (strong) AI's goal – to create a machine that can successfully imitate human thought – is mistaken. The Turing test should be relegated to the history of science, in the same way that the aim of imitating a bird was eventually abandoned by the pioneers of flight. The development of aircraft succeeded only when people stopped trying to imitate birds:

> In some ways, aircraft may never match the elegant precision of birds. But in other ways, they outperform them dramatically. Aircraft do not land in trees, scoop fish from the ocean or use the natural breeze to hover motionless above the countryside. But no bird can fly at 45,000 feet or faster than sound.

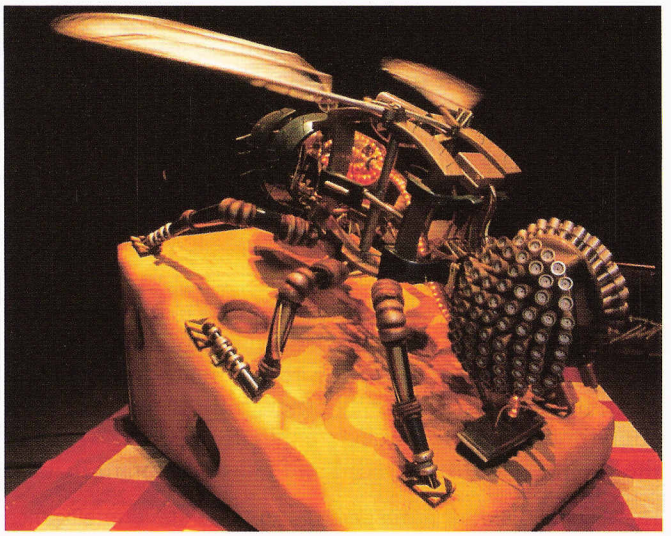
Rather than limiting the scope of AI to the study of how to mimic (or reproduce) human behaviour, Ford and Hayes argue that:

> ... the proper aim of AI is ... to create a computational science of intelligence itself, whether human, animal or machine ...

This brings us back to the CTM.

Do we need brains to be brainy?

For supporters of strong AI, our bodies – including our brains – are in no way necessary to our intelligence. In Boden's terms 'You don't need brains to be brainy' (in Rose, 2003). What she means by this is that you can model mind processes using the latest and most powerful computer systems, without paying attention to the underlying biology. Putting it another way, what matters is the program (software): the brain (hardware) is incidental. Strong AI claims that any physical system capable of carrying out the necessary computational processes can be described as intelligent, even if it's 'made of old



Giant robotic fly, designed to teach people about the structure and habits of this insect

beer cans' (in Searle's words). But many, as noted below, have argued that our brains *are* necessary.

- Flanagan (1984) finds it highly unlikely that our evolutionary history, genes, biochemistry, anatomy, and neurophysiology have nothing essential to do with our defining features (even though it remains logically possible).
- Searle (1987) believes that mental states and processes are real biological phenomena in the world, as real as digestion, photosynthesis, lactation, and so on (they are 'caused by processes going on in the brain').
- Penrose (1987) agrees that there's more to understanding than just carrying out some appropriate program, and that the actual physical construction of the brain is also important. He argues that a computer designed to follow the logical operations of every detail of the workings of the human brain would itself not achieve 'understanding', even though the person whose brain is being considered would claim to understand.
- The earlier generations of computers were essentially *serial processors*. They could perform – although admittedly incredibly quickly – only one operation at a time in sequence (in a *linear* fashion). AI researchers became convinced that real (biological) brains *don't* work like this at all, but instead carry out many operations in *parallel* and in a *distributed* manner. In other words, many parts of a network of cells are involved in any single function, and no single cell is uniquely involved in any. These considerations caused an explosion of interest in new computer designs based on *parallel distributed processing* (PDP) *principles,* promising new generations of machines.
- The central principle of this new brain-modelling approach is *connectionism,* based on the idea that the brain is composed of neural networks with multiple connections between them (see Chapter 4). If the aim of AI is to construct models which offer insights into human cognition, then it was necessary to look much more closely at the microstructure of the brain itself, to see if insights into the power of this natural information-processing engine might help develop a more realistic modelling system. Most PDP researchers were interested in how individual components (neurons) might operate collectively to produce the brain's information-processing capacity.
- According to Rose (2003), strong AI's separation of the mind from the brain is a form of mind–body dualism (see Chapter 49). But equally:

> ... the insistence on treating the brain as a sort of black box whose internal biological mechanisms and processes are irrelevant and all that matters is to match input to output, is reminiscent of the behaviourist programme in psychology ...

Can computers ever be like brains?

- According to Rose (2003), the very concept of AI implies that intelligence is simply a property of the machine itself. However, the neuronal system of brains, unlike computers, is radically indeterminate:

> ... brains and the organisms they inhabit, above all human brains and human beings, are not closed systems, like the molecules of a gas inside a sealed jar. Instead they are open systems, formed by their own past history and continually in interaction with the natural and social worlds outside, both changing them and being changed in their turn ...

- This openness creates a further level of indeterminacy to the functioning of both brain and behaviour. Unlike computers, brains aren't error-free machines. Yet brains are capable of modifying their structural, chemical and physical output in response to environmental events (they're highly *plastic*). They're also extraordinarily resilient in the face of injury, with undamaged parts taking over the function of damaged areas (they're highly *redundant*).
- Rose argues that brains process and remember information based on its *meaning,* which *isn't* equivalent to information in a computer sense. An essential difference between human and computer memory is that:

> ... each time we remember, we in some sense do work on and transform our memories, they are not simply being called up from store and, once consulted, replaced unmodified. Our memories are re-created each time we remember ... (Rose, 2003)

- At least for the foreseeable future, it seems that brains will continue to outperform computers when doing the kinds of things that they were naturally designed to do.

One of these might be consciousness (see Chapters 4 and 7). Currently, we simply don't know what makes the brain conscious, and so we cannot design a conscious machine. But since the brain is a physical entity and is conscious, it must have some design features (presumably physical) which make it conscious (McGinn, 1987). This doesn't mean that a machine *couldn't* be conscious, only that it would have to be the same kind of machine the brain is. Agreeing with Searle, Teichman (1988) states that, while we know that the computer hardware doesn't produce (initiate) the program, it's highly probable that the brain *does* help to produce mental states (see Chapter 49).

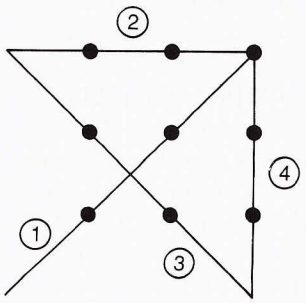
CHAPTER SUMMARY

- According to an **information-processing approach**, PS progresses through a series of logical stages: **defining/representing the problem**, **generating possible solutions** and **evaluating possible solutions**.
- The **behaviourist** view of PS as **trial-and-error** and **accidental success** was challenged by the **Gestalt** psychologists, who looked at how we impose **structure** on a problem.
- **Algorithms** and **heuristics** are two ways of generating possible solutions to a problem. Algorithms **guarantee** a solution, but can be time-consuming. Heuristics don't guarantee a solution, but can help produce solutions more quickly, as in **means–end analysis** (MEA).
- **Mental set/rigidity** and **functional fixedness/fixity** are ways in which past experience can hinder PS. Functional fixedness is a type of mental set, in which we fail to see that an object may have functions/uses other than its normal ones.
- Chess experts are only better at remembering board positions that could appear in an actual game, as opposed to random positions. Chess masters develop **global perceptual schemata** which allow them to see possible threats.
- **Expertise** reduces the strain on working memory (WM) by enabling the expert to draw on already available, **domain-specific knowledge** stored in long-term memory (LTM).
- **Expert systems** (ESs) apply knowledge in specific areas (such as medical diagnosis), enabling a computer to function as effectively as a human expert. But human experts cannot always say explicitly how they solve particular problems or make particular decisions.
- **DM** is a special case of PS, in which we already know the possible solutions or choices. According to **compensatory models**, we evaluate how all desirable potential outcomes might compensate for undesirable ones.
- **Non-compensatory models** are less precise but more commonly used approaches, in which not all features of each alternative are considered, and features don't compensate for each other.
- Because of the absence of information and time, rational decisions cannot always be made. So, we often resort to the **availability** and **representativeness heuristics**.
- Gambling is a form of **risk-taking** behaviour. Playing the National Lottery can be explained in terms of several heuristic strategies and biases, including the representativeness bias (which can explain the **gambler's fallacy**) and availability bias, **randomness bias**, **illusory correlation**, **flexible attribution**, **illusion of control** and **sunk cost bias**.
- Every general-purpose digital computer is an approximation to a **universal Turing machine**. Although originally designed as powerful calculators, computers are **general-purpose**, **symbol-manipulating machines**.
- According to **weak AI**, computers merely **simulate/mimic** thought or intelligence, while according to **strong AI**, they literally **reproduce/duplicate** thinking and intelligence.
- Underlying strong AI is the **computational theory of mind** (CTM), according to which intelligence is the ability to manipulate symbols. This is as true of a human mind as it is of a computer.
- Searle's **Chinese room thought experiment** is meant to show that the **Turing test** isn't the ultimate test of machine intelligence. But both have been criticised, and human intelligence shouldn't be regarded as the only or truest form of intelligence.
- According to CTM, the possession of a brain/the structure and mode of operation of the human brain are irrelevant. But many biologists, psychologists and others believe that there must be certain design features of the brain that have evolved to make it conscious.
- While digital computers process information in a **serial** fashion, brains operate in a **parallel** and also in a **distributed** manner. These considerations led to the development of **parallel distributed processing** (PDP).
- Brains and human beings are **open systems**, constantly interacting with the natural and social world. Brains may not be error-free machines, but they can perform certain tasks that are currently beyond the capability of any computer.

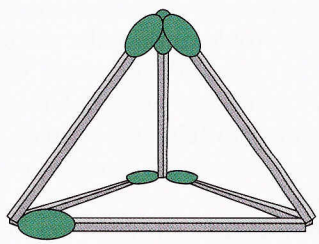
Links with other topics/chapters

- The Gestalt approach to PS is directly related to *Gestalt principles of perceptual organisation* (Chapter 15).
- The behaviourist emphasis on *trial-and-error learning of stimulus-response associations* (Chapter 11) is a *reductionist* account, while the Gestalt emphasis on the relationship between all the elements is a *holistic* approach (Chapter 49).

- Chess experts have phenomenal *short-term memory* for board positions – provided they're arranged non-randomly (according to the rules of chess). Knowledge of chess is stored in *long-term memory* (Chapter 17).
- The way that doctors frame the risks involved have been shown to influence patients' *compliance* with *medical advice and treatment* (Chapter 12).
- The illusory correlation can help explain the formation of *negative stereotypes* of racial and other minority groups (Chapter 22).
- Flexible attribution combines elements of the *actor-observer effect* (AOE) and the *self-serving bias* (SSB) (Chapter 23).
- According to Rose (2003), the PDP approach is *reductionist*. It takes the neuron as the unit of functioning and tries to simulate some of the brain's known properties using a new generation of supercomputers that perform parallel processing. By contrast, the CMT approach (which attempts to model *minds* rather than brains) is *holistic* (Chapter 49).
- Rose's (2003) claim that human memories (unlike a computer's) are re-created each time we remember is closely related to Bartlett's theory of *reconstructive memory,* which has had a major influence on research into *eyewitness testimony* (EWT) (Chapter 21).



Solution to the nine-dot problem



Solution to the matchsticks problem

Schema theory and everyday memory
An evaluation of schema theory
Reconstructive memory
The Bartlett 'approach'
Serial reproduction and 'The War of the Ghosts'
Replications of Bartlett's findings
Schemas and reconstructive memory
Eyewitness testimony (EWT)
Loftus's research
How useful are identification parades?
EWT, episodic memory (EM) and SM
Is a mistaken eyewitness better than none?
Factors influencing EWT
What do leading questions actually do?
Suggestibility and source misattribution
An evaluation of Loftus's research
The cognitive interview
Recognising faces
Helping people to remember faces
Video-witness testimony: a special case of EWT
Repression and the false-memory debate
Motivated-forgetting theory (repression)
Evidence for repression
Recovered memories and the false-memory debate
Do recovered memories exist?
Do false memories exist?
How might FMs be created?
Conclusions
Chapter summary
Links with other topics/chapters

21

APPLICATION

COGNITION AND THE LAW



INTRODUCTION AND OVERVIEW

This chapter is concerned mainly with *memory* and *forgetting*. But unlike Chapter 17, we'll be focusing on these crucially important cognitive processes from an *applied* perspective. Specifically, how has psychological research into memory and forgetting helped us understand and deal with certain situations that arise within our legal system, in particular, the issue of *eyewitness testimony* (EWT) and the controversy surrounding the *recovery of repressed memories* (sometimes referred to as the *false-memory debate*).

In 1973, the Devlin Committee was set up to look at over 2000 legal cases in England and Wales that had involved identification parades (or line-ups). In 45 per cent of cases, suspects were picked out, and of those people prosecuted after being picked out, 82 per cent were subsequently convicted. Of the 347 cases in which prosecution occurred when EWT was the *only* evidence against the defendant, 74 per cent were convicted (Devlin, 1976). This indicates the overwhelming weight given to EWT (Baddeley, 1999).

Nevertheless, the *reconstructive* nature of memory has led some researchers to question the accuracy of EWT (e.g. Wells, 1993). The view of memory as reconstructive stems from the work of Bartlett (1932), and central to his theory is the concept of a *schema*. Bartlett has had an enormous impact on Loftus's research into EWT.

Since the early 1990s, considerable publicity has been given to court cases in the USA, where parents are being sued for damages by their teenage or adult children, who accuse them of child sexual abuse (CSA). This has been remembered during the course of psychotherapy. It's assumed that these *recovered memories* had been repressed since the alleged CSA happened, and that the safety and support provided by the therapist allow them to become conscious many years later.

However, accused parents, and retractors (people who had recovered memories of CSA, accused their parents, then later withdrew the accusations) have also sued therapists and hospitals for implanting false memories in the children's minds. The False Memory Syndrome Foundation was set up in the USA in 1992, and in 1993 the British False Memory Society was founded, with 1000 families on its books by 1998 (Showalter, 1998). *Repression* is a theory of forgetting originally proposed by Freud, who's also regarded by many as at least partly responsible for the phenomenon of *false-memory syndrome*.

SCHEMA THEORY AND EVERYDAY MEMORY

When discussing semantic memory (SM) in Chapter 17, we noted that it became increasingly obvious during the 1970s that SM must contain structures considerably larger than the simple concepts involved in Collins & Quillian's (1969) *hierarchical network model* and Collins & Loftus's (1975) *spreading-activation model*. This 'larger unit' of SM is the *schema,* a concept first used by Bartlett (1932) as part of his theory of reconstructive memory (see below, pages 358–360).

At the core of *schema theory* is the belief that what we remember is influenced by what we already know, and that our use of past experience to deal with new experience is a fundamental feature of the way the human mind works. Our knowledge is stored in memory as a set of schemas, simplified, generalised mental representations of everything we understand by a given type of object or event based on our past experience. Schemas operate in a 'top-down' way to help us interpret the 'bottom-up' flood of information reaching our senses from the outside world.

Two major modern schema theories are those of Rumelhart (1975), and Schank (1975) and Schank & Abelson (1977). There's a good deal of overlap between them, and the broad characteristics they share are summarised by Rumelhart & Norman (1983, 1985), as follows:

- A schema is a packet of information comprising a *fixed/compulsory value* plus a *variable/optional value.* For example, a schema for buying something in a shop would have relatively fixed slots for the exchange of money and goods, while the variable values would be the amount of money and the nature of the goods. In particular cases, a slot may be left unspecified, and can often be filled with a 'default' value (a best guess given the available information).
- *Schemas can be related together to form systems.* They aren't mutually exclusive packets of information, but can overlap. For example, a schema for a picnic may be part of a larger system of schemas including 'meals', 'outings' and 'parties'.
- *Schemas represent knowledge at all levels of abstraction.* They can relate to abstract ideologies, abstract concepts (e.g. justice), or concrete objects (e.g. the appearance of a face).
- *Schemas represent knowledge rather than definitions.* They embody knowledge and experience of the world, rather than abstract rules.
- *Schemas are active recognition devices.* This is very similar to Bartlett's 'effort after meaning', whereby we try to make sense of ambiguous and unfamiliar information in terms of our existing knowledge and understanding (see below).

According to Schank (1975) and Schank & Abelson (1977), schemas or *scripts* represent commonly experienced social events, such as catching a bus and going to a restaurant. These allow us to fill in much of the detail not specified in any text that we might read. For example:

We had a tandoori chicken at the Taj Mahal last night. The service was slow and we almost missed the start of the play ...

can only be interpreted by bringing in a great deal of additional information (Baddeley, 1990). We need schemas that predict what would happen next and fill in those aspects of the event which are left implicit in the text. Scripts are essential ways of summarising common cultural assumptions, which not only help us to understand text and discourse but also predict future events and behave appropriately in given social situations. Scripts contain the sequences of actions we go through when taking part in familiar events, including the sorts of objects and actors we're likely to encounter.

ASK YOURSELF...

- Try writing a script for going to a restaurant, i.e. what sequence of events typically occurs when you go out for a meal, and who's involved at different times?

Table 21.1 A simplified version of Schank & Abelson's (1977) schematic representation of activities involved in going to a restaurant (from Bower *et al.*, 1979)

Name:	Restaurant
Props:	Tables
	Menu
	Food
	Bill
	Money
	Tip
Roles:	Customer
	Waiter
	Cook
	Cashier
	Owner
Entry conditions:	Customer is hungry
	Customer has money
Results:	Customer has less money
	Owner has more money
	Customer is not hungry
Scene 1:	Entering
	Customer enters restaurant
	Customer looks for table
	Customer decides where to sit
	Customer goes to table
	Customer sits down
Scene 2:	Ordering
	Customer picks up menu
	Customer looks at menu
	Customer decides on food
	Customer signals to waitress
	Waitress comes to table
	Customer orders food
	Waitress goes to cook
	Waitress gives food order to cook
	Cook prepares food
Scene 3:	Eating
	Cook gives food to customer
	Customer eats food
Scene 4:	Exiting
	Waitress writes bill
	Waitress goes over to customer
	Waitress gives bill to customer
	Customer gives tip to waitress
	Customer goes to cashier
	Customer gives money to cashier
	Customer leaves restaurant

An evaluation of schema theory

- Bower *et al.* (1979) asked people to list about 20 actions or events, in order, which commonly occur while eating at a restaurant, and found considerable agreement. For example, at least 73 per cent mentioned sitting down, looking at the menu, ordering, eating, paying the bill and leaving. Also, at least 48 per cent included entering, giving the reservation name, ordering drinks, discussing the menu, talking, consuming salad or soup, and ordering dessert, eating dessert and leaving a tip. So there were at least 15 events which formed part of many people's knowledge of what's involved in going to a restaurant. These findings broadly agreed with Schank and Abelson's restaurant script.
- When such events were incorporated into stories, people mistakenly tended to recall aspects of the passage which weren't explicitly included, but which were consistent with the script (that is, which could well have happened). The order of events was also changed to fit what would 'normally' happen. This is exactly what Bartlett would have predicted (see below).
- According to Cohen (1993):
  1. the whole idea of a schema is too vague to be useful
  2. there's an overemphasis on the inaccuracies of memory, overlooking the fact that complex events are sometimes remembered very precisely and accurately (especially the unexpected, unusual aspects)
  3. it's unclear how schemas are acquired in the first place; there seems to be a 'Catch-22' involved, since without schemas we cannot interpret new experiences, but we need new experiences to build up our schemas.

ASK YOURSELF...

- Can you apply this last criticism to Gregory's top-down theory of perception? (See Chapter 15.)

- Schank's (1982) *dynamic-memory theory* attempts (as the name implies) to take account of the more dynamic aspects of memory, and is a more elaborate and flexible model. It tries to clarify the relationship between general knowledge schemas and memory for specific episodes, based on a more hierarchical arrangement of memory representations. *Memory organisation packets* (MOPs) are at the bottom of the hierarchy, storing specific details about particular events. At higher levels, the representations become more and more general and schema-like. MOPs aren't usually stored for very long, becoming absorbed into the event schemas which store those features that are common to repeated experience. However, details of unusual or atypical events are retained (Cohen, 1993).



RECONSTRUCTIVE MEMORY

The Bartlett 'approach'

As we saw in Chapter 17, Ebbinghaus was the first to study memory systematically, using nonsense syllables. Although this 'tradition' is still popular with today's memory researchers, Bartlett (1932) argued that:

- Ebbinghaus's use of nonsense syllables excluded 'all that is most central to human memory'
- the study of 'repetition habits' had very little to do with memory in everyday life
- research should examine people's *active search for meaning,* rather than their passive responses to meaningless stimuli presented by an experimenter.

Although meaningful material is more complex than meaningless material, Bartlett argued that it too could be studied experimentally. As we saw earlier, Bartlett's concept of a schema is central to theories which attempt to explain the structure and organisation of knowledge in SM (a major part of LTM). Because of the large amount of work on the organisational aspects of memory (see Chapter 17), and because of the growing recognition of the need to study meaningful material (as opposed to lists of unrelated words, numbers, and so on), there has been a 'rediscovery' of Bartlett's work.

Serial reproduction and 'The War of the Ghosts'

One method used by Bartlett was *serial reproduction,* in which one person reproduces some material, a second person has to reproduce the first reproduction, a third has to reproduce the second reproduction and so on, until six or seven reproductions have been made. The method is meant to duplicate, to some extent, the process by which gossip or rumours are spread, or legends passed from generation to generation (and may be more familiar as 'Chinese whispers'). One of the most famous pieces of material Bartlett used was 'The War of the Ghosts', a North American folk tale.

Box 21.1 'The War of the Ghosts'

The title of this story is 'The War of the Ghosts'. One night two young men from Egulac went down to the river to hunt seals and while they were there it became foggy and calm. Then they heard war-cries and they thought: 'Maybe this is a war party'. They escaped to the shore and hid behind a log. Now canoes came up and they heard the noise of paddles and saw one canoe coming up to them. There were five men in the canoe and they said: 'What do you think? We wish to take you along. We are going up the river to make war on the people'. One of the young men said 'I have no arrows'. 'Arrows are in the canoe', they said. 'I will not go along. I might be killed. My relatives do not know where I have gone. But you', he said, turning to the other, 'may go with them'. So one of the young men went but the other returned home. And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water and they began to fight and many were killed. But presently the young man heard one of the warriors say: 'Quick, let us go home; that Indian has been hit'. Now he thought: 'Oh, they are ghosts'. He did not feel sick but they said he had been shot. So the canoes went back to Egulac and the young man went ashore to his house and made a fire. And he told everybody and said: 'Behold I accompanied the ghosts and we went to fight. Many of our fellows were killed and many of those who attacked us were killed. They said I was hit and I did not feel sick'. He told it all and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried. He was dead.



Frederic Bartlett (1886–1969)

When used with English participants, who were unfamiliar with its style and content, the story changed in certain characteristic ways (as noted below) as it was re-told.

- The story became noticeably *shorter.* Bartlett found that after six or seven reproductions, it shrank from 330 to 180 words.
- Despite becoming shorter, and details being omitted, the story became *more coherent.* No matter how distorted it became, it remained a story: the participants were interpreting the story as a whole, both listening to it and retelling it.
- It also became *more conventional,* retaining only those details which could be easily assimilated to the participants' shared past experiences and cultural backgrounds.
- It became *more clichéd* – any peculiar or individual interpretations tended to be dropped.

Replications of Bartlett's findings

Hunter (1964) used '*The War of the Ghosts*' and the serial reproduction method. He found similar changes to those originally reported by Bartlett. But the use of this folk tale has been criticised, because it's written in an unusual style, making it difficult for western participants to find connections between different parts of the story.

Another method used by Bartlett, *repeated reproduction,* involves the same participants recalling the story on different occasions. This produced similar results to those obtained with serial reproduction. Wynn & Logie (1998) used this alternative method, but instead of '*The War of the Ghosts*', they used a real-life event, namely first-year undergraduates' recollections of details of their first week at university. They were asked to recall this information in November, January, March and May (the students being unaware that this would happen).

Contrary to Bartlett's findings, Wynn and Logie found that the accuracy of the descriptions was maintained across the different intervals and regardless of the number of repeated recalls. This suggests that memories for distinctive events can be relatively resistant to change over time, even when repeatedly reproduced.

CROSS-CULTURAL STUDY 21.1

Remembering as a cultural activity

- An important implication of Bartlett's work is that memory is a *social phenomenon* that cannot be studied as a 'pure' process. Because he emphasised the influence of previous knowledge and background experience, Bartlett found that remembering is integrally related to the social and cultural contexts in which it's practised.
- When members of western and non-western cultures are compared on tasks devised in psychology laboratories, such as free-recalling lists of unrelated words, the former do better; this seems to reflect the meaninglessness of such tasks for the latter (see Chapter 17).
- According to Mistry & Rogoff (1994), culture and memory are enmeshed skills, and 'remembering' is an activity with goals whose function is determined by the social and cultural contexts in which it takes place.
- This helps to explain the phenomenal memory for lines of descent and history of Itamul elders in New Guinea, needed to resolve disputes over claims to property by conflicting clans.
- Bartlett himself described the prodigious ability of Swazi herdsmen to recall individual characteristics of their cattle. But since Swazi culture revolves around the possession and care of cattle, this ability isn't so surprising.
- What these examples show is that remembering is a means of achieving a culturally important goal, rather than the goal itself (Mistry & Rogoff, 1994).

Schemas and reconstructive memory

Bartlett concluded from his findings that *interpretation* plays a major role in the remembering of stories and past events. Learning and remembering are both active processes involving 'effort after meaning'; that is, trying to make the past more logical, coherent and generally 'sensible'. This involves making inferences or deductions about what could or should have happened. We reconstruct the past by trying to fit it into our existing understanding of the world. Unlike a computer's memory, where the output exactly matches the input, human memory is an 'imaginative reconstruction' of experience (see Chapter 20, page 352).

Bartlett called this existing understanding of the world a *schema.* Schemas (or schemata):

- provide us with ready-made expectations, which help to interpret the flow of information reaching the senses
- help to make the world more predictable
- allow us to 'fill in the gaps' when our memories are incomplete
- can produce significant distortions in memory processes, because they have a powerful effect on the way in which memories for events are encoded; this happens when new information conflicts with existing schemas (or schemata).

For example, Allport & Postman (1947) showed white participants a picture of two men evidently engaged in an argument (see Figure 21.1).

After looking briefly at the picture, participants were asked to describe the scene to someone who hadn't seen it. This person was then required to describe the scene to another person, and so on. As this happened, details changed. The most significant change was that the cut-throat razor was reported as being held by the black man.

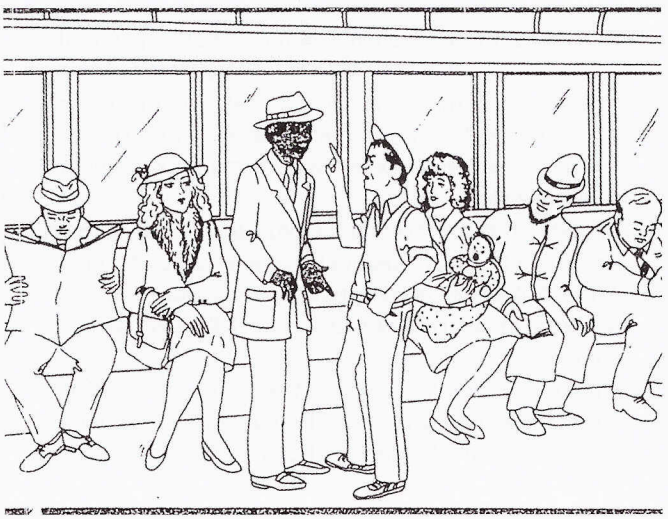


Figure 21.1 The stimulus material used by Allport & Postman (1947). The two men are engaged in an argument. The better-dressed man is black, and the white man has a cut-throat razor in his hand

ASK YOURSELF...

- What method was involved in Allport and Postman's experiment?
- What can you infer about the schema that the participants were using, which helps account for the distortion that took place?
- If the participants had been black, would you expect a similar distortion to have taken place?
- Are these results consistent with Bartlett's theory of reconstructive memory? Explain your answer.

Allport and Postman used serial reproduction, as Bartlett had done in his study using '*The War of the Ghosts*'. Presumably, the white participants used a schema which included the belief that black men are prone to violence. Black participants would be expected to have a rather different schema of black men, making them less likely to distort the details in the picture. Allport and Postman's findings are consistent with Bartlett's theory of reconstructive memory.

EYEWITNESS TESTIMONY (EWT)

Loftus's research

Bartlett's view of memory as reconstructive is also taken by Loftus, who has investigated it mainly in relation to *eyewitness testimony* (EWT). Loftus argues that the evidence given by witnesses in court cases is highly unreliable, and this is explained largely by the kind of misleading questions that witnesses are asked. Lawyers are skilled in asking such questions deliberately, as are the police when interrogating suspects and witnesses to a crime or accident.

Loftus has tried to answer the following questions:

- Is EWT influenced by people's tendency to reconstruct their memories of events to fit their schemas?
- Can subtle differences in the wording of a question cause witnesses to remember events differently?
- Can witnesses be misled into 'remembering' things that didn't actually occur?

How useful are identification parades?

The Devlin Committee (see *Introduction and overview*) recommended that the trial judge be required to instruct the jury that it isn't safe to convict on a single eyewitness's testimony alone, except in exceptional circumstances (such as where the witness is a close friend or relative of the accused, or where there's substantial corroborative evidence).

This recommendation is underlined by a famous case of misidentification involving an Australian psychologist. The psychologist in question had appeared in a TV discussion on EWT, and was later picked out in an identity parade by a very distraught woman who claimed that he'd raped her. The rape had in fact occurred while the victim was watching the psychologist on TV. She correctly recognised his face, but not the circumstances!

EWT, episodic memory (EM) and SM

According to Fiske & Taylor (1991), it's easy to see how a witness could confuse the mention of something in a question with its actual presence at the scene of the crime, if that something is commonly found in such situations. For example, a 'leading' question might refer to things that weren't actually present at the scene of the crime (stored in EM), but which might well have been (based on our schemas and stereotyped beliefs about the world stored in SM).

Similarly, a witness who examines a preliminary identification parade may later remember having seen one of the suspects before, but fail to distinguish between the identification parade and the scene of the crime – the innocent suspect may be misidentified as the criminal because s/he is *familiar.* This can be taken one stage further back. Several studies have shown that when witnesses view a line-up after having looked at mugshots, they're more likely to identify one of those depicted (regardless of whether that person actually committed the crime) than people who aren't shown the mugshot (Memon & Wright, 1999).

These (and the case of the Australian psychologist above) are examples of *source confusion* (or *source misattribution:* see page 363) – you recognise someone, but you're mistaken about where you know them from. This can have very serious consequences for the person who is misidentified!

Is a mistaken eyewitness better than none?

Using a fictitious case, Loftus (1974) asked students to judge the guilt or innocence of a man accused of robbing a grocer's and murdering the owner and his five-year-old granddaughter. On the evidence presented, only nine of the 50 students considered the man to be guilty. Other students were presented with the same case, but were also told that one of the shop assistants had testified that the accused was the man who had committed the crimes. Thirty-six of these 50 students judged him to be guilty.

A third group of 50 students was presented with the original evidence and the assistant's EWT. However, they were also told that the defence lawyer had discredited the assistant: he was shortsighted, hadn't been wearing his glasses when the crime occurred, and so couldn't possibly have seen the accused's face from where he was standing at the time.

ASK YOURSELF...

- How many students in the third group do you think judged the accused to be guilty?
- Explain your answer and say what this tells us about the importance of EWT.

In fact, 34 out of 50 thought he was guilty! So, a mistaken witness does seem to be 'better' than no witness. Moreover, confident witnesses are more likely to be seen as credible (i.e. accurate) compared with anxious witnesses, even though actual accuracy may not differ (Nolan & Markham, 1998).

Factors influencing EWT

- **Race:** Errors are more likely to occur when the suspect and witness are racially different (Brigham & Malpass, 1985). So, we're much better at recognising members of our own racial groups than members of other racial groups. This is reflected in the comment that 'They all look the same to me' when referring to members of different races (*the illusion of outgroup homogeneity:* see Chapter 22, page 388).
- **Clothing:** Witnesses pay more attention to a suspect's clothing than to more stable characteristics, such as height and facial features. It seems that criminals are aware of this, since they change what they wear prior to appearing in a line-up (Brigham & Malpass, 1985).
- **Social influence:** One source of social influence (see Chapter 26) is contact and exchange of information among witnesses. For example, Memon & Wright (1999) describe a study in which participants were asked in pairs whether they'd seen several cars in a previous phase of the study. When responding second, people were influenced by the first person's answers. If the first person said s/he did see the car previously, the second person was more likely to say the same, irrespective of whether the car really was previously seen.
- **Violence:** Does extreme emotion brand the experience indelibly on the victim's memory, or does it reduce the capacity for recollection, perhaps through repression (Baddeley, 1999: see below)? The usual method for investigating this is to expose participants to a film or a staged incident, in which some crucial violent event occurs (such as the apparent shooting of a child). Overall, the evidence suggests that memory for violent events is stronger than for a neutral event, but that recollection of associated detail is poorer. For example, there appears to be a 'weapons focus', whereby victims may concentrate their attention on the weapon itself, rather than the attacker's appearance. So:

  > ... fear may put a crucial feature of a situation into sharp focus, but may reduce the reliability of the witness's account of peripheral features. (Baddeley, 1999)

- **Misleading questions and suggestibility:** It seems that both adults and children are subject to reconstructive errors in recall, particularly when presented with misleading information. In other words, a witness can be highly suggestible. Different types of misleading question include:
  1. *leading questions,* as illustrated by Loftus & Palmer's (1974) experiment (see Key Study 21.1)
  2. questions which introduce *after-the-fact information,* as illustrated by Loftus (1975: see Key Study 21.2).

KEY STUDY 21.1 The effect of leading questions (Loftus & Palmer, 1974)

- Loftus and Palmer tested the effect of changing single words in certain critical questions on the judgement of speed.
- Participants were shown a 30-second videotape of two cars colliding, and were then asked several questions about the collision.
- One group was asked 'About how fast were the cars going when they *hit*?' For others, the word 'hit' was replaced by 'smashed', 'collided', 'bumped' or 'contacted'.
- These words have very different connotations regarding the speed and force of impact, and this was reflected in the judgements given.
- Those who heard the word 'hit' produced an average speed estimate of 34.0 mph. For 'smashed', 'collided', 'bumped' and 'contacted', the average estimates were 40.8, 39.3, 38.1 and 31.8 mph respectively (see Figure 21.2).

What do leading questions actually do?

Loftus and Palmer wanted to know if memory for events actually *changes* as a result of misleading questions, or whether the existing memory is merely *supplemented.*

Memory as reconstruction implies that memory itself is transformed at the point of retrieval, so that what was originally encoded changes when it's recalled.

To test this, Loftus & Palmer's (1974) study included a follow-up experiment. A week after the original experiment, those participants who'd heard the word 'smashed' or 'hit' were asked further questions, one of which was whether they remembered seeing any broken glass (even though there was none in the film). If 'smashed' really had influenced participants' memory of the accident as being more serious than it was, then they might also 'remember' details they didn't actually see, but which are consistent with an accident occurring at high speed (such as broken glass).

Of the 50 'smashed' participants, 16 (32 per cent) reported seeing broken glass. Only seven (14 per cent) of the 50 'hit' participants did so. These results appear to support the memory-as-reconstruction explanation.

Similarly, Loftus & Zanni (1975) showed participants a short film of a car accident, after which they answered questions about what they'd witnessed. Some were asked if they'd seen *a* broken headlight, while others were asked if they'd seen *the* broken headlight. Those asked about *the* headlight were far more likely to say 'yes' than those asked about a headlight.



Figure 21.2 Assessments of speeds of crashing vehicles can be influenced by the verb used to describe the impact. While (a) represents 'two cars hitting', (b) represents 'two cars smashing'. Which word is used in a question can influence people's estimates of how fast the cars were travelling at the time of impact

KEY STUDY 21.2 The effect of 'after-the-event' information (Loftus, 1975)

- Participants watched a short film of a car travelling through the countryside. They were all asked the same ten questions about the film, except for one critical question.
  - (a) Group A was asked 'How fast was the white sports car going when it passed the 'Stop' sign while travelling along the country road?' (There *was* a 'Stop' sign in the film.)
  - (b) Group B was asked 'How fast was the white sports car going when it passed the barn while travelling along the country road?' (There was *no* barn.)
- 'The' barn implies that there actually was a barn in the film, which is what makes it misleading.
- A week later, all the participants were asked ten new questions about the film. The final question was 'Did you see a barn?' Of group A participants, only 2.7 per cent said 'yes', while 17.3 per cent of group B participants said 'yes'.

Memory as reconstruction sees questions that provide misleading new information about an event (as with leading questions) becoming integrated with how the event is already represented in memory.

Suggestibility and source misattribution

As the Loftus studies show, witnesses may come to believe that they actually remember seeing items in an event that in fact have been (falsely) suggested to them. Currently, the most popular explanation for suggestibility effects is *source misattribution*. Witnesses are confusing information obtained outside the context of the witnessed event (*post-event information*) with the witnessed event itself (Memon & Wright, 1999). Memories of details from various sources can be combined with memories of that event (*memory blending*).

An evaluation of Loftus's research

While the evidence described above suggests that eyewitnesses are unreliable, are they really as unreliable as Loftus believes?

- Bekerian & Bowers (1983) have argued that Loftus questions her witnesses in a rather unstructured way. If questions followed the order of events in strict sequence, then witnesses weren't influenced by the biasing effect of subsequent questions. Despite some failures to replicate these findings (e.g. McCloskey & Zaragoza, 1985), an important practical consequence

of Bekerian and Bower's research is the *cognitive interview* (see Box 21.2).

- Contrary to the memory-as-reconstruction interpretation, Baddeley (1995) believes that 'the Loftus effect is not due to destruction of the memory trace but is due to interfering with its retrieval' (see Chapter 17).
- Stephenson (1988) points out that the bulk of the work on EWT has been carried out in laboratories, and has concentrated on eyewitness identification of people seen under fairly non-threatening conditions, or even people seen on films. In sharp contrast were the participants of a study by Yuille & Cutshall (1986): see Case Study 21.1.
- Loftus herself acknowledges that when misleading information is 'blatantly incorrect', it has no effects on a witness's memory. For example, Loftus (1979) showed participants colour slides of a man stealing a red purse from a woman's bag. 98 per cent correctly identified the purse's colour, and when they read a description of the event which referred to a 'brown purse', all but 2 per cent continued to remember it as red. This suggests that our memory for obviously important information accurately perceived at the time isn't easily distorted, as shown by Yuille & Cutshall's (1986) study.
- According to Cohen (1993), people are more likely to be misled if:
  (a) the false information they're given concerns insignificant details that aren't central to the main event
  (b) the false information is given after a delay (when the memory of the event has had time to fade)
  (c) they have no reason to distrust it.

CASE STUDY 21.1 Eyewitness memory of a crime (Yuille & Cutshall, 1986)

- The incident involved a shooting which occurred outside a gun shop in full view of several witnesses (in Vancouver, Canada).
- A thief had entered the gun shop, tied up the proprietor, and stolen some money and a number of guns. The store-owner freed himself, picked up a revolver and went outside to take the thief's licence number. But the thief hadn't yet entered his car, and in a face-to-face encounter on the street, separated by six feet, the thief fired two shots at the store-owner.
- After a slight pause the store-owner discharged all six shots from his revolver. The thief was killed, but the store-owner recovered from serious injury.
- Witnesses viewed the incident from various vantage points along the street, from adjacent buildings or from passing automobiles.
- Twenty-one of the witnesses were interviewed by the police shortly after the event, and 13 of them agreed to take part in a research interview four to five months later. In both sets of interviews (police and research), verbatim accounts of the incident were obtained and follow-up questions were asked in order to clarify points of detail. Also Yuille and Cutshall asked two misleading questions based on Loftus's 'a broken headlight'/'the broken headlight' technique.
- The sheer volume of accurate detail produced in both sets of interviews is truly impressive. The researchers obtained much more detail than did the police, because they were concerned with memory for details which had no immediate forensic value. Witnesses who were central to the event gave more details than did peripheral witnesses, but there was no overall difference in accuracy between the two groups.
- Significantly, the wording of the misleading questions had no effect, and those who were most deeply distressed by the incident were the most accurate of the witnesses.

The cognitive interview

An increasing number of police forces are using the *cognitive interview* (CI). Traditionally, police officers and lawyers have used the standard interview procedure, which involves a period of free recall about the event, followed by specific questions about details that emerge from the free recall. The CI draws on Tulving's research concerning the relationship between encoding and retrieval cues (see Chapter 17, pages 301–302).

Box 21.2 The cognitive interview (Geiselman *et al.*, 1985)

- **Reinstating the context:** The interviewer and interviewee try to recreate the context in which the incident occurred (the surroundings, such as the temperature, smells, sounds, the witness's feelings) before any attempt is made to recall the events themselves.
- **Reporting the event:** The interviewee is asked to report absolutely everything, regardless of how unimportant/irrelevant it may seem.
- **Recalling the event in several orders:** This includes reporting the event in reverse order.
- **Reporting the event from multiple perspectives:** The interviewee is asked to recall the event from, say, the perspective of the cashier in the case of a bank robbery.

The first two 'stages' are based on the concept of *encoding specificity*, that is, trying to provide maximum overlap between the context in which the crime was committed and the context in which the recall attempt is made. The second two try to capitalise on the idea that material can be retrieved using a number of different routes that may produce information about rather different aspects of the original event (Baddeley, 1999).

The initial test of the CI (Geiselman *et al.*, 1985) used a police training film of a violent crime. Participants were

interviewed 48 hours later, using either the new CI, or the standard Los Angeles police interview, or hypnosis prior to being asked to recall the incident using the standard procedure. Although the three methods didn't differ in the amount of false information they produced, the standard interview produced the least overall amount of information (an average of 29.4 items). The CI produced the most (41.2 items).

A second experiment introduced misleading information during the interview: 'Was the guy with the green backpack nervous?' (it wasn't green). Those tested with the CI were the *least likely* to be misled by false information.

Fisher & Geiselman (1988) have continued to develop the CI, using hints obtained from watching 'good' and 'poor' interviewers. These include the greater use of *open-ended questions,* and attempts to fit the *order of questioning* to the witness's order of experience. This has increased accurate reporting from 40 to 60 per cent. Bekerian & Dennett (1993) reviewed 27 experiments comparing the effects of the CI with more standard techniques. The CI proved superior in all cases: on average, about 30 per cent more information is accurately reported, with false information being slightly less common.

Harrower (1998) maintains that the CI procedure may be particularly beneficial for those interviewing *child witnesses,* especially those who may have been the victims of physical or sexual abuse. However, the interviewer must be trained in assessing the linguistic and cognitive competence of each child interviewee, and adapt the interview accordingly.

ASK YOURSELF...

- Without looking back at the photograph on page 358 of two men involved in a violent incident, try to answer the following questions.

1. What are the two men doing?
2. In which hand is one of the men holding a knife?
3. Are both men clean-shaven?
4. Is there anyone else in the picture?
5. How would you describe the man who isn't holding the knife?

Now look back at the photograph and check your answers.

Recognising faces

While the face isn't the only route to person identification, it's probably the most reliable (Bruce & Young, 1998). Laboratory experiments have shown that people are remarkably accurate at remembering briefly viewed, previously unfamiliar faces, typically scoring over 90 per cent correct when asked to decide which of a large set of faces were previously presented. But this may seem to be at odds with our sometimes embarrassing failure to recognise or identify faces in everyday life (e.g. Young *et al.*'s 1985 diary study). Bruce and Young suggest two main reasons for this discrepancy.

1. Laboratory experiments tend to test memory for identical pictures of faces, thereby confounding picture memory with true face memory. If memory for faces is tested with different pictures of the same face, accuracy drops dramatically (to 60 per cent: Bruce, 1982).
2. Recognition can be affected by changes in context between where the face was originally encountered and where memory for it is subsequently tested. Context is broadly defined to include expectations (consistent with reconstructive memory; see also Chapter 15), clothing, head shape and hairstyle. Most criminals disguise themselves in some way when committing a crime, which suggests their implicit understanding of the importance of context for later recognition. With familiar people, head shape/hairstyle become less dominant, and internal facial features become more important for recognition.

ASK YOURSELF...

- How could you account for this difference between familiar and unfamiliar faces?



Bill Clinton and Al Gore? Same face, different hair

Helping people to remember faces

Two major techniques used to probe witnesses' memory for faces are *reconstruction* and *identification*.

Reconstruction

Reconstruction involves producing, from the witness's description, an image of the criminal for circulation to other police forces or for the general public. Typically, the witness, with or without a trained operator, tries to construct a target face using a 'kit' of isolated facial features. Identification involves looking through photographs in an album of 'mug shots', or looking at a live 'line-up'/identity parade of potential offenders.

Performance using *Photofit* (and other similar 'kits') is generally very poor (e.g. Ellis *et al.*, 1978). One problem is that kits assume that a face can be deconstructed into its component parts. But facial identity may be more *holistic* than this, and relationships between features are at least as important as the features themselves (see Chapter 14, pages 236–238). *Photofit* offers only limited opportunities for the manipulation of such factors. There's a small number of 'cardinal' features, which people use regularly and reliably to describe and categorise faces (such as face shape, hair and age), but these are difficult to manipulate directly using *Photofit* (Bruce & Young, 1998).

The rapid development of powerful computer graphics at relatively low cost has made it possible to develop more interactive systems. *E-fit,* for example, although still based around a basic 'kit' of photographic face parts, provides much greater opportunity for the blending and elaboration of these parts. This results in much more realistic images (Bruce & Young, 1998). Currently, as a witness gives a description of, say, the eyes, the computer chooses the best set of eyes for you. The witness doesn't see the face until it's completed. But a modified 'jigsaw' *E-fit,* being pioneered by the UK Face Processing Research Group, allows the witness to watch the face being built up. But because it's important that the features are always seen as part of a face, a cartoon outline and features are used to replace those elements that haven't yet been described (Greenhaigh, 2000).

Identification

It's essential that the other members of a line-up/ID parade (the non-suspects or 'distractors') aren't obviously different from the suspect. For example, in one extreme case, the suspect was known to be Asian, and the line-up included only one Asian (Baddeley, 1999)! More subtle problems include:

- showing a photograph of the accused to a witness before the line-up; this could cause false identification based on *source confusion* (see above); this should clearly be avoided (Baddeley, 1999)
- there's often an assumption (usually implicit, but occasionally explicit) that the line-up actually includes the criminal. This reinforces a bias towards making a positive identification: witnesses are already highly motivated to do so and know the police don't go the trouble of arranging a line-up unless they have a suspect (Baddeley, 1999; Bruce & Young, 1998).

Video-witness testimony: a special case of EWT

Now that closed-circuit television (CCTV) is commonplace in shops, banks and so on, there's an increased chance that an image of a criminal will be captured on videotape. This would seem to side-step neatly the problems with human face memory. Once a suspect has been apprehended (using some combination of eyewitness and other forensic evidence), the person's identity can be readily confirmed by comparison with the videotape. But things are rather more complicated than this (Bruce, 1998).

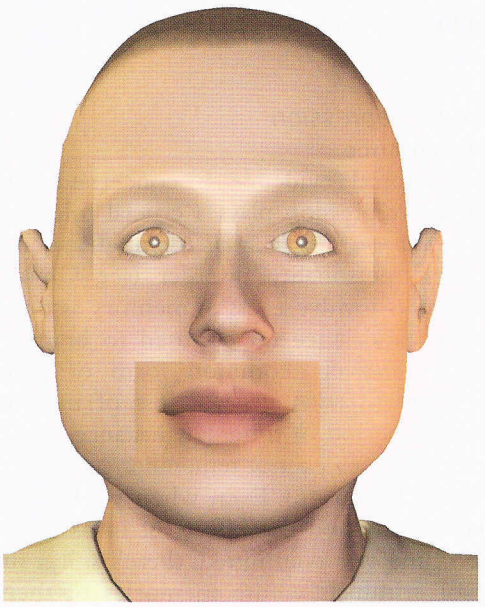


Figure 21.3 An E-fit face



A violent crime caught on CCTV

Cameras may be set to scan large public areas, so that images obtained of any individual may be of very poor resolution. Bruce cites the example of a prosecution case based entirely on the evidence of a CCTV image, which showed a young black man robbing a building society. The defence used an expert witness, who helped get the evidence thrown out. Clearly, a CCTV image alone might prove very little about a suspect's precise identity.

Bruce has investigated face recognition and memory for over 25 years. She'd always assumed that people's difficulties in matching two different views, expressions, or lightings were due to major changes along these dimensions. Evidence now suggests that rather subtle pictorial differences are difficult for human vision to deal with. Even the more successful computer systems for face recognition have the same difficulties.

The quality of CCTV images can vary considerably:

- camera and lighting angles may provide only a poorly lit, messy image of the top or back of someone's head
- images may be blurred, and black-and-white images cast lots of shadows
- even when the image quality is reasonably high, judging different images as being of the same individual may be remarkably prone to error
- CCTV images may be most helpful in identifying criminals when the faces captured on tape are of someone known to a witness. People who are highly familiar are easily identified from CCTV images of a quality that would make identification of an unfamiliar face extremely difficult.

KEY STUDY 21.3 Make sure you know the offender (Burton *et al.*, 1999)

Bruce and her colleagues at Stirling and Glasgow Universities conducted two experiments, in which they manipulated familiarity.

- Male and female psychology lecturers were caught on security cameras at the entrance to the psychology department. This video footage was shown to both psychology and non-psychology students, and experienced police officers, who were then asked to indicate which of the people in a set of high-quality photographs they'd seen on tape.
- The psychology students made the most correct identifications, suggesting that previous familiarity with the target helps with recognition.
- The same video footage was used, but this time the head, body or gait was obscured. Participants performed quite poorly when the gait or body were obscured, but they did significantly worse when the head was obscured.
- Thus, the advantage of familiarity seems to be due to recognition of facial features, rather than body shape or how people walk. But unusual gait or body shape might produce different results.

Consistent with these findings are those of a study by Davies & Thasen (2000). When participants were asked to match unfamiliar faces seen on videotape to one of a series of 'mugshots', they found very low rates of correct identification, even when a close-up still of the target face was in constant view. Whether the video images were in colour or black and white made no difference.

ASK YOURSELF...

- According to Harrower (1998), research clearly shows that most people remember faces poorly and recall details not from memory, but in terms of what they believe criminals *should* look like. How can this finding be explained?

This is another example of how schemas are used to fill the gaps in memory. It represents another demonstration of reconstructive memory.

REPRESSION AND THE FALSE-MEMORY DEBATE

Motivated-forgetting theory (repression)

According to Freud (1901), forgetting is motivated, rather than the result of a failure to learn or other processes. Memories which are likely to induce guilt, embarrassment, shame or anxiety are actively, but unconsciously, pushed out of consciousness as a form of *ego defence* (see Chapters 12 and 42):

> The essence of repression lies simply in turning something away, and keeping it at a distance, from the conscious ... (Freud, 1915)

Unconscious or repressed memories are exceedingly difficult to retrieve (they're *inaccessible*) but remain *available* ('in storage': see Chapter 17). They continue to exert a great influence over us, even though we have no awareness of them.

Evidence for repression

Clinical evidence

As far as clinical evidence is concerned, it's widely accepted that repression plays a crucial role in different types of *psychogenic* (or *functional*) amnesia such as fugue and multiple personality disorder (see Gross, 2003a). These disorders involve a loss of memory associated with a traumatic experience (as opposed to brain injury or surgery). A relatively common form of psychogenic amnesia is *event-specific amnesia:* loss of memory for a fairly specific period of time. For instance, some violent criminals claim they cannot remember carrying out their crimes (see Chapter 46). Even when we have ruled out both malingering and the effects of intoxication at the time the crime was committed, there's still a substantial number of criminals whose memories of their crimes seem to have been repressed (Parkin, 1993). This is especially likely when murder victims are close relatives or

lovers of the murderer killed in a crime of passion (Taylor & Kopelman, 1984).

Ian Brady (convicted along with Myra Hindley of the so-called Moors Murders) repressed memories of his hideous crimes for many years before finally remembering where he'd buried his victims (Parkin, 2000). However, in a study of children who'd seen a parent killed, none showed evidence of repression; on the contrary, the experience tended to be recalled all too frequently (Baddeley, 1999). This, and the observation that psychogenic amnesia can disappear as suddenly as it appeared, are difficult for motivated-forgetting theory to explain.



Ian Brady (born 1938)

Parkin (1993) also cites evidence that repressive mechanisms may play a beneficial role in enabling people with *post-traumatic stress disorder* to adjust (see Chapters 12 and 44). For example, survivors of the Holocaust judged to be better adjusted were significantly less able to recall their dreams when woken from REM sleep (see Chapter 7) than less well-adjusted survivors (Kaminer & Lavie, 1991).



For those who endured them, are these horrors best forgotten?

However, 'repression' doesn't necessarily imply a strictly Freudian interpretation. When the concept is considered more broadly than Freud intended, that is, in the general sense that our memory systems can in some way block particular forms of memory, it deserves to be taken seriously (Parkin, 2000). This is also the view taken by the British Psychological Survey on 'Recovered Memories' (BPS, 1995: see below). Similarly, although traumatic experiences can undoubtedly produce memory disturbances, there's greater doubt as to whether Freud's explanation is the best one (Anderson, 1995a).

Experimental evidence

KEY STUDY 21.4 Testing Freud's repression hypothesis (Levinger & Clark, 1961)

- Levinger and Clark looked at the retention of associations to negatively charged words (such as 'quarrel', 'angry', 'fear') compared with those for neutral words (such as 'window', 'cow', 'tree').
- When participants were asked to give immediate free associations to the words (to say exactly what came into their minds), it took them longer to respond to the emotional words. These words also produced higher galvanic skin responses (GSR – a measure of emotional arousal).
- Immediately after the word association tests had been completed, participants were given the cue words again and asked to try to recall their associations.
- They had particular trouble remembering the associations to the emotionally charged words.
- This is exactly what Freud's repression hypothesis predicted, and for some years the study stood as the best experimental demonstration of repression (Parkin, 1993).

However, other studies show that, while highly arousing words tend to be poorly recalled when tested immediately, the effect *reverses* after a delay (Eysenck & Wilson, 1973). If the words are being repressed, this shouldn't happen (they should stay repressed), suggesting that *arousal* was the crucial factor.

ASK YOURSELF...

- If you were to repeat the Levinger and Clark experiment, what change would you introduce in order to test the 'arousal hypothesis'?

Parkin *et al.* (1982) replicated the original study, but added a *delayed recall* condition: participants were asked to recall their associations seven days after the original test. The results supported Eysenck and Wilson's interpretation – higher arousal levels inhibit immediate recall but increase longer-term recall.

In a later replication, Bradley & Baddeley (1990) used an immediate and a 28-day delayed condition. They found clear support for the arousal hypothesis. But later

research hasn't always supported the arousal interpretation, and the question of emotional inhibition remains open (Parkin, 1993).

Recovered memories and the false-memory debate

As noted in the *Introduction and overview*, the False Memory Syndrome Foundation (in the USA) and the British False Memory Society (BFMS) were founded in the early 1990s, largely by parents accused by their grown-up children of having sexually abused them when they were children. The accusing children discovered repressed memories of child sexual abuse (CSA) during the course of psychotherapy; hence, from their and their therapists' perspectives, these are *recovered memories* (RMs).

However, from the perspective of the accused parents, these are *false memories* (FMs), implanted by therapists into the minds of their emotionally vulnerable patients/clients. These unethical, unscrupulous therapists are, in turn, accused by parents of practising *recovered-memory therapy,* which induces *false-memory syndrome* (FMS).

This brief account of the false-memory debate raises several, interrelated issues, spanning the psychology of memory and forgetting, the nature of psychotherapy (in particular, Freudian psychoanalysis), and the ethics of psychotherapy in general. When children sue their parents over alleged CSA, the family is inevitably torn apart and individual lives can be ruined. Hence, the need for support groups such as the BFMS. But the false memory debate has also caused division amongst psychologists, as well as between psychologists and psychiatrists. The key questions that we'll concentrate on in the remainder of this chapter are: do RMs exist, do FMs exist and, if so, how might they be created?

Do recovered memories exist?

The answer to this question depends very largely on how the concept of repression is understood. If these memories have been repressed, and are now retrieved from the unconscious during the course of therapy, then there must first be sound evidence for the existence of repression. This is the process which is supposed to keep recollections of the CSA hidden from the victim in the first place, until many years later, as an adult in therapy, the unconscious is 'unlocked'.

When discussing repression above, we saw that the strongest evidence is clinical, but that this is far from conclusive. We also need to take a closer look at Freud's view of memory.

Box 21.3 Freud and screen memories

- According to Mollon (2000), it's sometimes asserted that Freud believed that the events of a person's life are all recorded accurately somewhere in the mind, like video recordings. They're supposedly preserved in their original form, available but made inaccessible by repression.
- However, in a paper on *Screen Memories* (1899), Freud argued that memories, especially of events of long ago, may be constructed like dreams. A 'screen memory' is one that's apparently emotionally insignificant, but is actually a substitute for a more troubling memory with which it's become associated. But he argued that the distinction between screen memories and other memories from childhood is unclear:

  It may indeed be questioned whether we have any memories at all from our childhood: memories relating to our childhood may be all that we possess. Our childhood memories show us our earliest years not as they were but as they appeared at the later periods when the memories were aroused. In these periods of arousal, the childhood memories did not, as people are accustomed to say, emerge; they were found at that time. And a number of motives, with no concern for historical accuracy, had a part in forming them, as well as in the selection of the memories themselves. (Freud, 1899)

- Thus, Freud argued that memories of childhood may not be what they seem. The subjective sense of remembering doesn't mean that the memory is literally true. Memories are like dreams or works of fiction, constructed out of psychodynamic conflict, serving wish-fulfilment and self-deception (see Chapter 45). True memories of childhood may simply be unobtainable. Our apparent memories may be fabrications created later (Mollon, 2000).

If Freud is right, then RMs can no longer be memories of actual CSA, but phantasies of abuse. This reflects Freud's rejection of the *seduction theory* in favour of the Oedipal theory (see Chapter 35). Essentially, these correspond to actual abuse and phantasised abuse respectively as causes of adult neurosis. But, rightly or wrongly:

> ... that adult emotional disorders originate from repression of memories of experiences in early childhood which can be 'uncovered' by psychoanalysis ... [is] ... part and parcel of Freud's heritage. ... [it is an] essential element ... in the recovered memory therapist's armoury. (Esterson, 2000: personal communication)

Freud appears to be in a no-win situation. Esterson is claiming that Freud's theory of repression and his therapeutic methods are the basic tools of RM therapists, which makes Freud the arch-enemy of accused parents and the BFMS. But if it's pointed out that RM therapists have misunderstood Freud's theory of repression and the nature of childhood memories, this also seems to play into the hands of Freud's accusers. In other words, if memories are essentially *constructed,* rather than 'discovered' or 'recovered' ('unearthed' to use an archaeological analogy which Freud himself used), it becomes easier to understand how FMS occurs: vulnerable patients can easily be 'persuaded' that a constructed memory (a phantasy that CSA took

place) is, in fact, an objectively true, historically verifiable event (the CSA actually happened).

In defence of Freud, Ofshe (in Jaroff, 1993) contends that RM therapists have invented a mental mechanism ('robust' repression) that supposedly causes a child's awareness of sexual abuse to be driven entirely from consciousness. There's no limit to the number of traumatic events that can be repressed, or to the length of time over which the series of events can occur.

According to Loftus (in Jaroff, 1993):

> If repression is the avoidance in your conscious awareness of unpleasant experiences that come back to you, yes, I believe in repression. But if it is a blocking out of an endless stream of traumas that occur over and over that leave a person with absolutely no awareness that these things happen ... and re-emerge decades later in some reliable form, I don't see any evidence for it. It flies in the face of everything we know about memory.

Many practising psychotherapists would agree with Loftus. A report published in the British Journal of Psychiatry (Brandon *et al.*, 1998) distinguishes between (a) CSA that's reported in childhood or kept secret although unforgotten, and (b) RMs of CSA, previously completely forgotten, that emerge in adulthood during therapy, usually in women in their thirties or forties. For some patients, RMs can escalate into FMS, in which a person's identity comes to centre around the:

> ... memory of a traumatic experience which is objectively false but in which the person strongly believes ... The individual avoids confrontation with any evidence that might challenge the memory ...

Brandon *et al.* summarise the findings of studies that have compared these two kinds of CSA:

- 90 per cent of RM patients are women, while in documented abuse cases the sex ratio is close to 50:50
- while only 3 per cent of RM accusations are made against stepfathers, they are much more likely to be involved in documented childhood cases
- while documented abuse usually involves older children or adolescents, RM cases recall abuse before the age of four, or even in infancy.

ASK YOURSELF...

- What conclusions can you draw from these reported differences about the validity of RMs?
- Do you find it plausible that we can recall events that happened to us as infants?
- What's your earliest childhood memory?

Do false memories exist?

According to the 1995 British Psychological Society (BPS) report on RMs, CSA which is alleged to have occurred before four years of age and which doesn't continue beyond that age, might not be retrievable in adulthood in a *narrative* form (*describable in words*). Very early memories are *implicit* rather than explicit, and are reflected in behaviour, outside conscious awareness. This means that we don't need the concept of repression in order to explain the 'forgetting' of childhood experiences, but it also implies that some RMs *could* be false (or at the very least inaccurate).

In a survey of 810 chartered psychologists, about 90 per cent believed that RMs are sometimes or usually 'essentially correct', a negligible number believed they're always correct, about 66 per cent believed they're possible, and over 14 per cent believed that one of their own clients has experienced FMs (BPS, 1995).

How might FMs be created?

The role of suggestion

According to Loftus (1997), false memories can be constructed by combining actual memories with the content of *suggestions* from others. This may result in source confusion (see above, page 363). Consistent with the role of suggestion is the fact that RMs began to be reported more frequently after the publication of *The Courage to Heal* (Bass & Davis, 1993) in the USA. This book claimed that virtually every behavioural or emotional disorder is caused by CSA, and could be cured by recovering repressed memories of that abuse. It was largely responsible for the RM 'movement' in psychotherapy. Many therapists began to introduce 'memory work', which usually involved the use of hypnosis, under the false assumption that hypnosis can unlock forgotten memories (Parkin, 2000).

While there have been many experimental studies of FMs (see Loftus, 1997), their generalisability to the therapeutic setting may be limited (Lyddy, 1999). But the findings of a recent study by Loftus and her colleagues have serious implications for therapeutic practice. They simulated the kinds of activities that go on in psychotherapy, and examined how they affected a client's autobiographical memory (AM).

KEY STUDY 21.5 Changing beliefs and memories through dream interpretation (Mazzoni *et al.*, 1999)

- Participants were selected from a sample who completed a life events inventory (LEI) and reported not having experienced specific important childhood events (such as being bullied or lost in a crowd).
- Two weeks following the initial LEI, those in the experimental group completed what they thought was an unrelated dream survey. In a 30-minute session, they received information about the content of their reported dreams that suggested they'd either been bullied or lost before age three. Their attitudes towards dream interpretation were also probed.
- Controls received no such suggestion, but completed unrelated filler tasks or participated in a non-suggestive dream session.

- Two weeks later, participants completed another LEI. They were all fully debriefed, and a final sub-set of dream participants completed a questionnaire stating their post-experimental beliefs about their memories.
- The mean LEI change showed that half of the experimental group participants were now confident that the critical event had occurred. Some also produced concrete, specific memories of the events, and denied a link between the dream and childhood event sessions.
- In addition, a strong prior belief in the value of dream interpretation was associated with increased confidence in the target event. No such changes occurred in the controls.

The role of imagination

A survey of psychotherapists in the USA and UK (Poole *et al.*, 1995) found that over 20 per cent reported using instructions to give free rein to imagination as a memory recovery technique with patients who couldn't explicitly remember childhood abuse. Loftus and her colleagues asked what effect such imaginative activity would have with people who hadn't had the experience in the first place.

Garry *et al.* (1996) found that a one-minute period of imagination (regarding childhood incidents such as 'breaking a window with your hand') led a significant minority of participants to claim the event was more likely to have occurred, compared with controls who weren't asked to imagine the incident. (The experimental participants had previously said the incident was unlikely to have occurred.)

This demonstrates what Loftus (2001) calls *imagination inflation,* 'the phenomenon that imagining an event increases subjective confidence that the event actually happened'. Other investigators have replicated the basic finding and have helped to answer some key questions, such as those listed below.

- How does imagination inflation work?
- Does imagination inflation produce false beliefs, or does it merely act as a retrieval cue to dredge up true beliefs?
- Does imagination inflation change a person's beliefs about the past, or does it act to produce specific pseudo-memories?
- Are particular kinds of individuals particularly susceptible to imagination inflation?

Based on a review of relevant research, Loftus (2001) maintains that:

> ... imagination can influence memory for a complex event that occurred only a few minutes before the imagination activity. In less time than it takes to make an omelette, people can be led to report that they witnessed events that would have constituted criminal activity in real life.

And again:

> ... Imagination supplies pieces of detail. Subsequent repetition of that detail (overtly or covertly) can turn those pieces into autobiographical memory facts.

CONCLUSIONS

The fact that FMs can be created doesn't mean that all RMs are false (Loftus, 1997). The BPS has published a draft set of new guidelines for psychologists working with clients in contexts in which issues related to RMs may arise. The preamble states that:

> ... there can be no doubt for psychologists of the existence of ... (CSA) as a serious social and individual problem with long-lasting effects. In addition, there can be little doubt that at least some recovered memories of CSA are recollections of historical events. However, there is a genuine cause for concern that some interventions may foster in clients false beliefs concerning CSA or can lead them to develop illusory memories. (Frankland & Cohen, 1999)

CHAPTER SUMMARY

- **Schema theory** sees schemas as the 'units' of SM, rather than simple concepts. Our knowledge is stored in memory as simplified mental representations of objects and events, which we use to interpret new experiences. One influential form of schema theory is the notion of **scripts**.
- Bartlett introduced the concept of **schema** to help explain how we remember **meaningful material**, such as stories. Memory isn't a 'pure' process that can be studied outside the **social/cultural contexts** in which it takes place.
- Bartlett used **serial reproduction** to study **reconstructive memory**, which uses schemas (schemata) to interpret new information. While schemas help to make the world more **predictable**, they can also **distort** our memories.
- Loftus has applied Bartlett's view of memory as reconstructive to the study of **eyewitness testimony** (EWT). The Devlin Committee recommended that convictions shouldn't be based on a single EWT alone (except in exceptional circumstances).
- Source **confusion/misattribution** can account for why suspects may be mistakenly selected from identification parades. EWT appears to be a persuasive source of evidence, even if the witness is discredited by the defence lawyer.
- **Misleading questions** can take the form of either **leading questions** or those which introduce **after-the-fact information**. Both types can induce **reconstructive errors**.
- Loftus believes that leading questions actually **change** the memory for events, rather than merely **supplementing** the existing memory. But the influence of

misleading questions may be reduced if witnesses are interviewed in a structured way (as in the **cognitive interview**), and the 'Loftus effect' may relate to the **retrieval** of the original memory.

- Blatantly incorrect information has no effect on EWT. People are more likely to be misled if the false information is insignificant, presented after a delay, and believable.
- The use of CCTV hasn't removed the problem of misidentification of suspects. Both humans and computer systems have difficulty dealing with subtle pictorial differences, and the quality of CCTV images can vary considerably. Highly **familiar** faces are identified most reliably.
- According to Freud's **motivated-forgetting** theory, unacceptable memories are made inaccessible through **repression**.
- While cases of **psychogenic amnesia** are consistent with Freud's theory, a strictly Freudian interpretation may not be necessary, and experimental support for the repression hypothesis is inconclusive.
- There is currently great controversy over **recovered memories** (RMs) of CSA and **false-memory syndrome**. RM therapists are accused of implanting false memories of CSA into patients, while patients accuse their parents of the abuse.
- There is experimental evidence that implicates both **suggestions** from others (including therapists) and the use of **imagination** (often encouraged by therapists) in the creation of FMs.
- Most psychologists and psychiatrists seem to accept the **possibility** of FMs, but this doesn't mean that all RMs of CSA are false.

Links with other topics/chapters

- The term 'schema' was borrowed from the neurologist Henry Head, who used it to represent a person's concept of the location of limbs and body: see Penfield's *homunculus* (Chapter 4).
- Schemas as the basic unit of *semantic memory* are much more widely accepted than the simple concepts involved in Collins and Loftus's *hierarchical network model* or Collins and Quillian's *spreading activation model* (Chapter 17).
- Schank and Abelson (1977) built their scripts into a *computer program* (SAM), which they claim is capable of answering questions about restaurants and understanding stories about restaurants (see Chapter 20).
- *Stereotypes* are a type of schema that help to explain Allport and Postman's findings, as well as other evidence relating to *selective remembering* (Chapter 22).
- While Loftus believes that misleading questions actually change the *memory trace* for events, Baddeley claims that they merely interfere with its *retrieval* (Chapter 17).
- The cognitive interview draws on Tulving's research into the relationship between *encoding* and *retrieval cues* (Chapter 17).
- *Photofit,* and other similar means of helping witnesses remember the face of a suspect, are based on the assumption that faces can be deconstructed into their *component parts.* But facial identity is much more *holistic* than this – it's the *relationship* between the features that's crucial (Chapter 14).
- Some of the *clinical* support for Freud's theory of repression comes from the *event-specific amnesia* of *violent criminals* for their crimes (Chapter 46).
- The FM debate raises fundamental questions regarding the very nature of our memories of childhood, as well as the nature of psychotherapy (Chapter 45). It also highlights some of the *ethical* issues relating to psychotherapy, including the *power* of the therapist and the *vulnerability* of the patient (Chapter 48).

FOUR

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22

SOCIAL PERCEPTION



INTRODUCTION AND OVERVIEW

Social (or person) perception refers to the perception of people (as opposed to physical objects: see Figure 22.1). The focus of this chapter is on *interpersonal perception* or *ordinary personology*, the process by which

> ordinary people come to know about each others' temporary states (such as emotions, intentions, and desires) and enduring dispositions (such as beliefs, traits, and abilities) from their actions ... (Gilbert, 1998)

This is included in what Fiske & Taylor (1991) call *social cognition* ('the process by which people think about and make sense of other people, themselves, and social situations'). According to Fiske (2004), social cognition builds on *attribution theory*, which is discussed in Chapter 23.

This area of research illustrates the unique nature of psychology as a whole. Psychologists are, effectively, studying 'themselves': they're part of the subject matter. In order to study human behaviour, they must utilise the very same processes they're trying to explain – in this case, perception.

The impression-formation research represents some of the earliest research conducted in social psychology, and it flourished during the 1950s, 1960s and 1970s. It was carried out largely from the perspective of *the perceiver* and looked at *central vs peripheral traits*, the *primacy–recency effect*, *implicit personality theory* and *stereotyping*. But we'll also discuss it from *the actor's* point of view (that is, the person being perceived), by considering some of the ways in which we try to influence others' impressions of us (*impression management/self-presentation*).

Since the 1980s, these traditional perspectives of person perception have largely been replaced by that of *social cognition*. This differs from the earlier research more in terms of the overall approach than the phenomena being investigated. The study of impression formation was very 'cognitive', in that it was concerned with the content of our thoughts about others. But social cognition reflected the *information-processing approach*, which has become psychology's dominant paradigm since the 1950s (see Chapters 2 and 3). This is concerned less with the content and more with the, often unconscious, automatic processes that underlie our (usually) conscious impressions of others.

PERCEIVING OBJECTS AND PERCEIVING PEOPLE

According to Fiske (2004), when we form impressions of other people it seems to happen *immediately* ('automatically'). But in fact we:

> ... search the social horizon unaware that [we] are using mental binoculars and that things are much farther away than they appear. All our experience ... is actually *mediated* or filtered through a psychological lens, our perceiving apparatus. Although we experience the world as if we take in a literal, unfiltered copy, each person passes reality through a different lens...

We're aware only of the *end product* of this process, which is our experience of the person. Part of Heider's (1958) common-sense psychology (equivalent to ordinary personology) is this direct experience of the world, which he contrasts with the *scientific* analysis of how people perceive it (see Chapter 23).

As we saw in Chapter 15, this applies equally to perception of objects. As Figure 22.1 shows, both social (or person) and object perception involve *selection*, *organisation* and *inference*. As applied to perceiving people, this might mean:

- focusing on people's physical appearance or on just one particular aspect of their behaviour (*selection*)
- trying to form a complete, coherent impression of a person (*organisation*)
- attributing characteristics to someone for which there's no direct or immediate evidence, as in stereotyping (*inference*).

ASK YOURSELF...

- In what ways does perceiving people differ from perceiving objects?

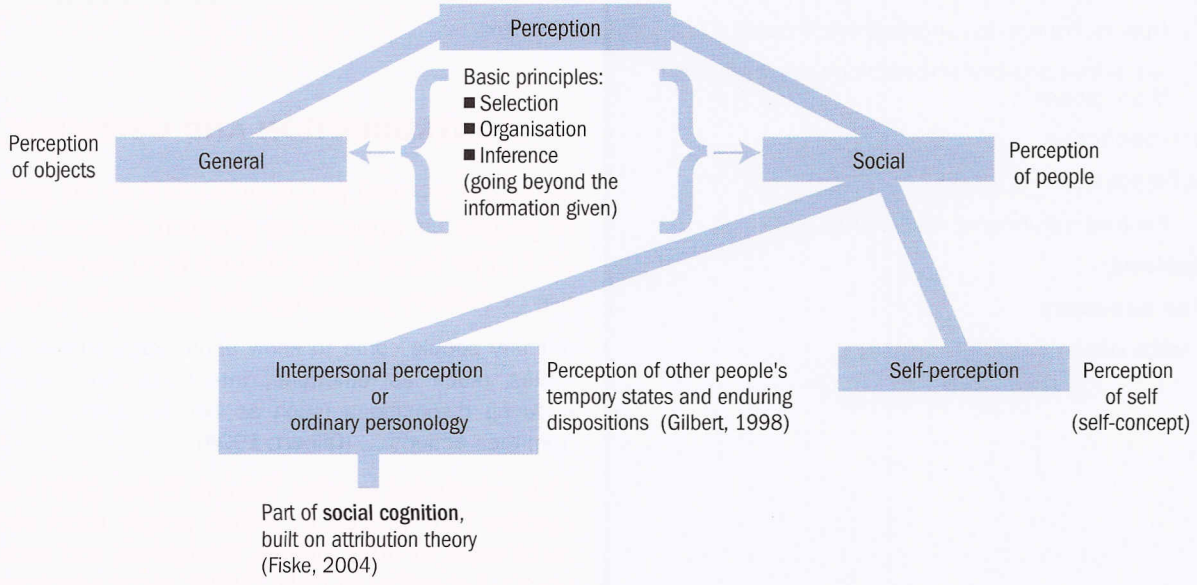


Figure 22.1 Relationship between general and social perception

- People *behave* (but objects don't). It's often behaviour which provides the data for making inferences about what people are like.
- People are *causal agents* – that is, they intend to act on their environment (Fiske & Taylor, 1991).
- People *interact* with other people (but they don't interact with objects or objects with each other). One person's behaviour can influence another's, so that behaviour is *mutually influential*.
- People anticipate being observed, and this is related to *self-presentation* (Fiske & Taylor, 1991: see below).
- People are generally more *changeable* than objects, and it's harder to verify the *accuracy* of observations about people (what they're 'really' like) (Fiske & Taylor, 1991: see Chapter 42).
- People *perceive* and *experience* (but objects cannot). One person's perception can influence the other's (especially his/her non-verbal behaviour), so that each person's perception of the other is at least partly a product of the other's perception of him/her. As Fiske & Taylor (1991) put it, social perception is *mutual perception*.

Phenomenological psychologists regard experience as the major source of 'data' (as opposed to behaviour) in social interaction (see Chapter 2). For example, Laing (1967) argued that the task of *social phenomenology* is to relate 'my experience of your behaviour to your experience of my behaviour'. In other words, it studies the relationship between experience and experience.

In his book *Knots* (1972), Laing dramatically (and often humorously) demonstrates the kinds of tangles that human relationships can get into. He does this in the form of short prose poems and diagrammatic poems. Here are two of the shorter and more straightforward examples.

1. Jack frightens Jill that he will leave her because he is frightened she will leave him.
2. Jack: 'You are a pain in the neck.
   To stop you giving me a pain in the neck
   I protect my neck by tightening my neck muscles,
   Which gives me the pain in the neck you are.'
   Jill: 'My head aches through trying to stop you giving me a headache.'

For Laing, 'knots' like these illustrate how 'my experience of another is a function of the other's experience of me', and vice versa.

ARE WE ALL PSYCHOLOGISTS?

ASK YOURSELF...
- In what ways can we all be considered psychologists?

As we noted earlier, everyone tries to 'figure people out', explain, predict and, very often, control others' behaviour, as part of their everyday living in a social world. These also happen to be the three traditionally accepted aims of science, including psychology (see Chapter 3). Gahagan (1984) defines interpersonal perception as 'the study of how the layperson uses theory and data in understanding people'. She breaks this definition down further into three main components:

1. The study of how people perceive others as *physical objects* and form impressions of their physical appearance, actions and the social categories to which they can be assigned. Often the first thing we notice about other people is some aspect of their appearance (such as their clothes or hair: see Chapter 21), and to this extent we're treating them as no more than 'things'. This is usually the first step involved in stereotyping, since we usually categorise people on the basis of physical appearance.
2. The study of how people perceive others as *psychological entities*. We form impressions of what kind of person they are, or we infer what their feelings, motives, personality traits, and so on might be (having already categorised them).
3. The study of the *lay person as a psychologist*. According to Nisbett & Ross (1980):

   > We are all psychologists. In attempting to understand other people and ourselves, we are informal scientists who construct our own intuitive theories of human behaviour. In doing so, we face the same basic tasks as the formal scientist ...

'Intuitive theories' is another way of referring to 'implicit personality theories' (see below, pages 383–384).

Box 22.1 Some important differences between the psychologist and the lay person

- The lay person uses his/her theories for *pragmatic* (or *practical*) and immediate purposes, as opposed to gaining knowledge for its own sake.
- The lay person is rarely a disinterested observer of another's behaviour. We usually have a vested interest in what's going on, and are emotionally involved to some extent. The professional, as a scientist, has to be 'detached' and objective (although complete detachment is impossible: see Chapter 3).
- The lay person may be completely unaware of the reasoning s/he has followed when making inferences about others, and this reasoning may change from one situation to another. (This relates to the apparently automatic nature of our perceptions: see above). So, the lay person's 'theories' aren't spelled out or articulated (hence 'implicit' personality theories) and may not be consistent. But psychologists must try to be consistent and make their reasoning explicit, so that other psychologists can examine it.

(Based on Gahagan, 1984, 1991)



'I spy, with my little eye...'

THE PERSON AS THINKER

We've already noted that social psychology has always been strongly cognitive. People are thinking organisms (as opposed to emotional organisms or mindless automatons) who 'reside' between stimulus and response (a S–O–R model as opposed to an S–R model: see Chapters 2 and 11). We've also seen that social cognition represents a fairly recent way of looking at the thinking involved in our social interactions.

According to Fiske & Taylor (1991), there are four guises that the cognitive tradition has assumed. They see the thinker, respectively, as follows:

1. *Consistency seeker.* This refers to the principle of *cognitive consistency,* around which a number of theories of attitude change were built in the 1950s, the most influential being Festinger's *cognitive dissonance theory* (see Chapter 24). All the theories claimed that cognitive inconsistency produces a strong motivation to reduce the inconsistency.
2. *Naïve scientist.* Attribution theories are central to the view that, by trying to infer unobservable causes from observable behaviour, we all operate as amateur scientists (see above). This view was first proposed by Heider, the 'father of attribution theory', in 1958, but most attribution theories were formulated between the mid-1960s and early 1970s. They attempted to account for how people *ought* to attribute causes to behaviour under 'ideal' conditions (they're *normative*). They also took the 'naïve scientist' model too far, by seeing ordinary people as completely logical and systematic in their thinking (see Chapter 23).
3. *Cognitive miser.* Partly as a reaction against normative attribution theories, Nisbett and Ross (1980), Taylor (1981) and others introduced the term 'cognitive miser' to convey the idea that people are limited in their capacity to process information. They take shortcuts whenever they can, adopting strategies that simplify complex problems. This might lead them to draw biased and hence inaccurate conclusions (relative to what the normative theories predict), but seeing people as fallible thinkers represents a much more *descriptively accurate* account of how people actually think about behaviour. This is reflected in studies of error and bias in the attribution process, but also, more generally, in *heuristics* (Tversky & Kahneman, 1974) or 'rules of thumb' (see Chapter 20). Some examples are given in Table 22.1.
4. *Motivated tactician.* This refers to a development of the cognitive miser view, 'putting back' the motivational and emotional variables that were removed from the original cognitive consistency model. The motivated tactician is a:

> ... fully engaged thinker who has multiple cognitive strategies available and chooses among them based on goals, motives, and needs ... (Fiske & Taylor, 1991)

This corresponds to what Leyens & Codol (1988) call the 'cognitive–affective human being'.

Table 22.1 Some examples of heuristics used in uncertain or ambiguous situations

Availability: We judge the frequency/probability of an event according to the number of instances of it that can readily be brought to mind (remembered), and so which are cognitively available. For example, being able to think of several friends who are studying psychology in other colleges/universities leads you to believe that psychology is nationally one of the most popular subjects (which, in fact, it is!).
Representativeness: We decide whether a particular person/event is an example of a particular category. For example, if X has long hair, is wearing a skirt, has a high-pitched voice, and is called Jo, then there's a good chance X is female – but not necessarily! It's a safe bet, because there's a match between the person in front of you and your stereotyped belief (or prototype) of what females are like.
Simulation: Judging what's likely to be/have been the outcome of some event/incident, according to how easily different outcomes can be brought to mind. For example, we're often much more angry and upset by 'near misses' than when we 'missed it by a mile' – we can imagine 'If only I'd ...', or 'If only that man in front of me ...' much more easily in the former than in the latter.
Anchoring: When we have no information about a particular event, we may draw on information about a similar event as a reference point or 'anchor'. For example, if asked to estimate how many hours per week a fellow psychology student studies, in the absence of any specific knowledge you may base your answer on how many (or few!) hours you yourself put in.

Evaluation of social cognition: what's happened to the 'social'?

Critics of social cognition (e.g. Moscovici, 1982; Zajonc, 1989) have argued that it may have taken social psychology too far towards cognitive psychology, so that there may not be any 'social' in social cognition. Many of the cognitive processes and structures that have been proposed seem to be unaffected by social context: they seem to be taking place within an apparently isolated person who (just happens to be) thinking about social objects. But this isn't what's meant by 'social cognition'. Instead, we should be focusing on the link between people and the social object. This is truly social, because it's concerned with how cognition is socially constructed, shared and maintained by different members of a given social group, or even a whole society. To study 'social' cognition by studying what's going on inside the head of individuals is *reductionist* (see Chapter 49).

Stereotypes illustrate the shared nature of cognition, but perhaps the best example of how cultural knowledge may be constructed and transmitted is Moscovici's (1961, 1981) theory of *social representations* (see Chapter 2, pages 29–30).

Social representations (SRs)

According to Moscovici (1981), social representations are:

> ... a set of concepts, statements and explanations originating in daily life in the course of inter-individual communications. They are the equivalent, in our society, of the myths and belief systems in traditional societies; they might even be said to be the contemporary version of common sense ...

Characteristics of SRs

- Moscovici (1961) showed that people have simplified (and often mistaken) ideas about Freud's psychoanalytic theory. Many people have heard of Freud, just as they've heard of Einstein or Stephen Hawking, but most will have only the vaguest knowledge of their respective ideas and theories. This illustrates the *personification* of new and complex ideas, that is, linking them with a person.
- Complex ideas are also often converted into the form of visual images, as in a cartoon where the darker side of a person's nature is portrayed as a devil (in one balloon) and his/her conscience as an angel (in another). This kind of *figuration* is sometimes used to convey Freud's concepts of the id and superego respectively (with the person him/herself being the ego).
- Both personification and figuration are examples of *objectification,* that is, the need to make the abstract concrete (Moscovici & Hewstone, 1983). For example, thinking of God as 'a father' gives some sort of reality to a supernatural concept. We also need to *anchor* new and unfamiliar ideas into some pre-existing system (see Table 22.1).



Stephen Hawking (born 1942). You don't have to be a cosmologist, physicist or mathematician to have heard of him, or even to have read one of his books

An example of anchoring is given in Jodelet's (1980) study of the re-housing of ex-psychiatric hospital patients in a French village. They were immediately labelled '*bredins*' (a local term for vagrants or 'half-wits'). Despite the term's almost total inaccuracy, it served to reduce something totally unknown and alien to something familiar.



Figure 22.2 A representation of Freud's concept of the id, ego, and superego, using figuration

The functions of SRs

- They facilitate communication between individuals and groups by establishing a shared 'social reality'.
- They also guide social action: individuals will interpret their own and others' behaviour in the light of this shared knowledge.

- Through socialisation, shared SRs are impressed on the child, infiltrating to the 'core of the personality', and imposing limits to perceptions and attitudes (Moscovici & Hewstone, 1983).
- In a way, the study of SRs is the study of the transformation from knowledge to common sense (Moscovici & Hewstone, 1983) or 'popular consciousness', and the theory of SRs 'explains how the strange and the unfamiliar become, in time, the familiar' (Farr & Moscovici, 1984). It's the study of how SRs evolve and are communicated between groups and individuals that makes this true social cognition.

ASK YOURSELF...
- Can you think of any other examples of SRs?
- Where do you think they come from?

SRs provide an evolving framework for making sense of the world, deriving from the mass media, scientific and religious movements, and intergroup relations (Moscovici, 1984). They also have important consequences for how we deal with one another, and how society responds to particular individuals and groups. For example, whether abnormal behaviour is conceptualised in moral, biological, religious, or social terms will determine how social policy-makers, the government, as well as the general public, will respond to it (see Chapter 43). When the Yorkshire Ripper was convicted for multiple rapes and murders, he was held to be criminally responsible (despite his schizophrenia). As Hogg & Abrams (2000) point out:

> Such distinctions are dependent more on society's current social representations of good and evil, sanity and insanity, than they are on objectively measurable criteria.

Whenever people engage in conversation or debate controversial issues, such as 'what to do with paedophiles', whether homosexuals should be allowed to become foster/adoptive parents, whether cannabis should be legalised, or whether we should pay higher taxes to fund public services like the NHS, SRs become apparent.

SRs, prejudice and discrimination

According to Horton (1999), underlying much racist talk or discourse is a hidden core, which consists of:

> ... a social representation of human nature, including the belief in a hereditary factor in natural character. Biological, psychological and religious images and ideas make up this inner core. Racialism corresponds to a social representation which gives replies to questions such as 'What is man?', 'What are his origins?' and 'Why are people different?'

Billig's (1978) participant observational study of the National Front (now the British National Party/BNP) revealed that beneath black stereotypes and active hostility towards blacks lay a complex set of ideas. These included the need for racial cleansing and belief in a Zionist conspiracy.



Residents campaigning against the planned move of a convicted paedophile into their neighbourhood on his release from prison. The belief that they cannot help but reoffend is part of the Social Representation of paedophiles

> By offering scapegoats instead of a rational analysis of the situation, the Nazis gave hope to the German people by attributing the crisis to a cause that was relatively easily controllable by elimination – the Jews ... (Horton, 1999)

For Horton, SR theory, by providing a lay theory of causality:

> ... offers a social psychological explanation of 'prejudice' that takes into full account the phenomena of active hostility towards, and persecution and elimination of, outgroups, which experimental social psychology has not been able to offer.

Scapegoating and other theories of prejudice and discrimination are discussed in Chapter 25.

Box 22.2 The social representation of AIDS

- According to Joffe (1996), the early representation of AIDS in the West, by both the scientific and lay communities, was in terms of *outgroups*, namely, homosexuals and/or Africans. This anchoring acts as a form of identity-protection, and has operated throughout the ages.
- Joffe gives the example of syphilis as it swept through Europe in the fifteenth century. It became associated with foreigners and outgroups: the English called it the 'French pox', and for the Japanese it was the 'Chinese disease'. This applied also to typhus, leprosy, polio and cholera (the pandemic diseases).

- 'Blaming the foreigner' is necessary in order to punish the perceived cause of the crime and prevent its return. This *scapegoating* is vital for maintenance of the social order, and the greater the potential threat, the greater the need to exterminate the 'demons' (Poliakov, 1980, in Horton, 1999).

FORMING GLOBAL IMPRESSIONS OF PEOPLE

Central versus peripheral traits

Certain information we have about a person (certain traits we believe they possess) may be more important in determining our overall impression of that person than other information. This was demonstrated in Asch's (1946) classic study.

KEY STUDY 22.1 Building our impressions around something warm or cold (Asch, 1946)

- Asch presented participants with a stimulus list of adjectives describing a fictitious person. For one group, the adjectives were: intelligent, skilful, industrious, warm, determined, practical and cautious. A second group had the same list, except that the word 'cold' replaced the word 'warm'.
- Both groups were then presented with a response list of 18 different adjectives and were asked to underline those which described the target person.
- The two groups chose significantly and consistently different words from the response list. For example, the 'warm' group saw the character as generous, humorous, sociable and popular, while the 'cold' group saw him as having the opposite traits. There were also certain qualities attributed to him equally by both groups (reliable, good-looking, persistent, serious, restrained, strong and honest).
- When 'polite' and 'blunt' were used instead of 'warm' and 'cold', participants underlined almost identical words in the response list.
- Asch concluded that 'warm–cold' represented a *central trait* or *dimension*, while 'polite–blunt' represented a *peripheral trait* or *dimension*.
- The central traits which seem to influence our global perception in this way are implicitly *evaluative;* they're to do with whether the person is likeable or unlikeable, popular or unpopular, friendly or unfriendly, kind or cruel, and so on.

Kelley (1950) wanted to see whether the description of the target person as 'warm' or 'cold' would influence participants' behaviour towards a *real* (as opposed to hypothetical) person.

KEY STUDY 22.2 The 'warm–cold' variable in a naturalistic setting (Kelley, 1950)

- Students were told that their regular teacher wouldn't be coming, that they'd be having Mr X instead, and that they'd be asked to assess him at the end of the session. Mr. X was a male member of staff not known to the students.
- Before he arrived, the students were given some biographical notes about Mr X. For half the students, these included the description 'rather warm' and for the other half 'rather cold'; otherwise the biographies were identical.
- There then followed a 20-minute discussion between the teacher and the students, during which Kelley recorded how often each student attempted to interact with the teacher. After he left the room, students assessed him on 15 rating scales (e.g. 'knows his stuff–doesn't know his stuff', 'good-natured–irritable').
- Those given the 'warm' description consistently responded more favourably to him than those given the 'cold' description. The two groups also responded differently when asked to write a free description.
- In addition, 56 per cent of the 'warm' group participated in the discussion, compared with 32 per cent of the 'cold' group.

What makes central traits central?

For Asch, a set of traits produces a coherent impression or configuration (a Gestalt: see Chapter 15), in which the meaning of one trait has been influenced by the others. The principle of coherence makes all the traits fit together into a well-integrated portrait (Fiske, 2004). Central traits exert a major organising influence, and can generate inferences about additional traits not given in the set, while peripheral traits have little or no influence. However:

- according to Anderson's (1974) *averaging/algebraic model,* people extract the evaluative element from each component of the impression (that is, each trait's inherent likeability). They then average the separate evaluations into an overall evaluation – this is an explicitly *piecemeal, elemental* account, which sees traits as completely independent of each other and having no influence on each other (Fiske, 2004)
- Bruner & Tagiuri (1954) argued that both general impressions and inferences about additional traits are due to people's *implicit personality theories* (IPTs: see below)
- Wishner (1960) found that the impact of the traits 'warm' and 'cold' on inferences about other traits depends on their prior associations with those traits; so 'warm' and 'cold' affect inferences of traits like 'generous' and 'popular' because they're all (already)

associated in people's IPTs, but they *aren't* associated with other traits (such as 'reliable' and 'honest'). This suggests that central traits *don't* need to be incorporated into different Gestalten as Asch claimed; indeed, Asch found only negligible differences in the traits inferred when 'warm' and 'cold' were presented alone, and when they were presented as described in Key Study 22.1

- the *meaning* of various traits may nevertheless be altered by the context in which they appear, as Asch originally suggested. For example, if someone is described as 'proud', this is rated as closer to 'confident' when it appears in the context of positive traits, but as closer to 'conceited' when presented in the context of negative traits (Zebrowitz, 1990)
- Wishner also showed that whether or not a trait is central depends on what else is known about the person (it's *relative*). For example, in Asch's study, 'warm–cold' was central in relation to generous/humorous/sociable/popular, but peripheral (or at least neutral) in relation to reliable/good-looking/persistent/serious/restrained/strong/honest. This suggests that traits are neither central nor peripheral in themselves; rather, it depends on the pattern of correlations with other traits in any particular study.

The primacy–recency effect

ASK YOURSELF...

- Do you believe that first impressions are more influential than later impressions? If so, why?
- Does it make a difference if the person is a potential sexual partner (i.e. does the element of potential sexual attraction affect the impact of initial impressions)?

The other major explanation of global perception concentrates on the *order* in which we learn things about a person:

- the *primacy effect* refers to the greater impact of what we learn first about someone ('first impressions count')
- the *recency effect* refers to the greater impact of what we learn later on.

Initial support for a primacy effect came in another study by Asch (1946). He used two lists of adjectives describing a hypothetical person, one in the order: intelligent, industrious, impulsive, critical, stubborn and envious, and the other in the reverse order. Participants given the first list formed a favourable overall impression, while those given the second list formed an unfavourable overall impression.

ASK YOURSELF...

- How might you account for Asch's findings?

KEY STUDY 22.3 Forming an impression of Jim (Luchins, 1957)

Participants were allocated to one of four groups.

- Group 1 heard a description of an extrovert character called Jim.
- Group 2 heard an introvert description.
- Group 3 heard the first half of the extrovert description, followed by the second half of the introvert description.
- Group 4 heard the reverse of the list of group 3.

Groups 1 and 2 were control groups used to establish that participants could accurately identify extroverts and introverts.

- All the participants were then asked to rate Jim in terms of introversion–extroversion. Group 1 judged him to be the most extroverted and group 2 the most introverted (as you'd expect). Although the judgements of groups 3 and 4 were less extreme, group 3 rated Jim as being more extrovert than group 4.
- Remember, groups 3 and 4 received the same information about Jim, only the *order* was different. Luchins concluded that the *earlier* elements of the description had a *greater impact* than the later elements.

Both the Luchins and Asch studies involved hypothetical people. In a study by Jones *et al.* (1968), participants watched a student (a stooge of the experimenters) trying to solve a series of difficult multiple-choice problems. They were then asked to assess his intelligence. The student always solved 15 out of 30 correctly, but one group saw him get most of the right answers towards the beginning, while another group saw him get most of the right answers towards the end.

ASK YOURSELF...

- Which group do you think assessed him as more intelligent?
- According to common sense, which group would judge him to be more intelligent?

The common-sense prediction would be that when the student got most right towards the *end*, he'd be judged as *more* intelligent: he'd seem to be learning as he went along. When he got most right towards the beginning, his early successes could be attributed to guesswork or 'beginner's luck'. Jones *et al.* in fact made the common-sense prediction that there'd be a *recency* effect. But what they found was a *primacy effect*. Significantly, when asked to recall how many problems the student had solved correctly, those who'd seen the 15 bunched at the beginning said 20.6 (on average), while those who'd seen them bunched at the end said 12.5 (on average). These memory distortions (over- and underestimations) also reflected the impact of the primacy effect.

Explaining the primacy effect

- Luchins says that when later information is discrepant with earlier information, people tend to regard the first information as revealing the 'real' person. The later information is discounted, because it contradicts what came first.
- Anderson (1974) maintains that people pay more attention to information presented when they're first trying to form an impression about someone. Having formed some initial impression, they pay less attention to any subsequent information.
- Asch's explanation is that the first bit of information affects the meaning of later information, which is made consistent with the former. For example, if you initially find out that someone is courageous and frank, and you later learn that he's also undecided, you may take that to mean 'open-minded' rather than 'wishy-washy' (Zebrowitz, 1990).

But does the primacy effect always prove more powerful than the recency effect? The answer seems to be yes, generally, but there are certain conditions.

- Luchins reasoned that if the primacy effect is due to decreased attention to later information, then it should be possible to prevent it by warning people against making snap judgements. He found this to be particularly effective if it was given between the presentation of the two inconsistent pieces of information about the same individual. Similarly, Hendrick & Constanini (1970) found that primacy seems to prevail unless participants are specifically instructed to attend closely to all the information.
- A negative first impression appears to be more resistant to change than a positive one. One explanation is that negative information carries more weight, because it's likely to reflect socially undesirable traits or behaviour and, therefore, the observer can be more confident in attributing the trait or behaviour to the person's 'real' nature. (This is relevant to Jones and Davis's attribution theory: see Chapter 23, pages 396–398.) It may be more adaptive for us to be aware of negative traits than positive ones, since the former are potentially harmful or dangerous.
- Luchins found that, although the primacy effect may be important in relation to strangers, as far as friends and other people whom we know well are concerned, the recency effect seems to be stronger. For example, we may discover something about a friend's childhood or something that happened to them before we knew them, which might change our whole perception of them. 'How well do we (or can we) know anybody?'

ASK YOURSELF...

- Can you think of any experiences like this that you have had?

INFERRING WHAT PEOPLE ARE LIKE

The halo effect

Asch's original finding that the inclusion of 'warm' produces a more positive impression compared with the same list including 'cold' demonstrates the *halo effect*. If we're told a person is warm, then we tend to attribute them with other favourable characteristics (a positive halo). The reverse is true if we're told the person is 'cold' – we attribute them with a *negative halo*. The halo effect seems to illustrate very well two basic principles of perception (see Figure 22.1):

- we like to see people in as *consistent* (or organised) a way as possible. It's easier to regard someone as having either all good or all bad qualities than a mixture of good and bad. Two quite extreme examples of this are when lovers regard each other as perfect and faultless ('love is blind': see Chapter 28) and the '*mirror-image phenomenon*', where enemies see each other as all bad (see Chapter 25)
- the halo effect is a very general form of implicit personality theory (IPT). These theories enable us to infer what people are like when we have only very limited information about them.

Implicit personality theories (IPTs)

As we saw earlier, we all have 'implicit' theories about what makes people 'tick'. One kind of implicit theory is to do with how personality is structured and what traits tend to go together or cluster. Zebrowitz (1990) refers to these as 'person type' IPTs.

The importance of names

Our names are part of the central core of our self-image (see Chapter 33), and they can sometimes form the basis for others' expectations. Harari & McDavid (1973) pointed out that first names, like surnames, are often associated with particular characteristics, partly determined by the media (for example, in American movies the hero and heroine are often called Stephen and Elizabeth, and the villains and fall-guys Elmer and Bertha). They asked experienced teachers to evaluate a set of short essays written by 11-year-olds who were identified by first name only. Some essays were randomly associated with four names stereotyped by other teachers as attractive and favourable (David, Michael, Karen and Lisa) and four stereotyped as unattractive and unfavourable (Elmer, Hubert, Bertha and Adelle). So, the *same* essays were associated with *different* names for *different* teachers. Those written by 'attractive' names were graded a full letter grade higher than those by 'unattractive' names and, significantly, the effect was stronger with boys' names than with girls'.

KEY STUDY 22.4 Names and psychiatric diagnosis (Birmingham, in Adler, 2000)

- Birmingham, a forensic psychiatrist at Southampton University, asked 464 British psychiatrists to provide a diagnosis based on a one-page description of a 24-year-old who'd assaulted a train conductor.
- When they were asked to assess 'Matthew', over 75 per cent gave him a sympathetic hearing, proposing that he was suffering from schizophrenia and in need of medical help.
- But when renamed 'Wayne', psychiatrists gave him a more sinister character: he was twice as likely as Matthew to be diagnosed as a malingerer, a drug abuser, or suffering from a personality disorder (see Chapter 43).

The importance of physical appearance

Another kind of IPT involves inferring what somebody is like psychologically from certain aspects of their physical appearance. Allport (1954) gave examples of widely held, but totally unfounded, beliefs that fat people are jolly, high foreheads are a sign of superior intelligence, eyes too close together are a sign of untrustworthiness, and redheads have fiery tempers.

A number of studies have demonstrated the 'attractiveness stereotype'; that is, the tendency to infer that physically attractive people also have more attractive personalities (see Chapter 28).

Stereotypes and stereotyping

Stereotypes can be thought of as a special kind of IPT that relates to an entire social group. The term was introduced into social science by Lippman (1922), who defined stereotypes as 'pictures in our heads'. Table 22.2 gives some other definitions.

Table 22.2 Some definitions of stereotypes and stereotyping

'... the general inclination to place a person in categories according to some easily and quickly identifiable characteristic such as age, sex, ethnic membership, nationality or occupation, and then to attribute to him qualities believed to be typical to members of that category ...' (Tagiuri, 1969)
'... a shared conception of the character of a group ...' (Brown, 1986)
'... the process of ascribing characteristics to people on the basis of their group memberships ...' (Oakes *et al.*, 1994)
'... widely shared assumptions about the personalities, attitudes and behaviour of people based on group membership, for example ethnicity, nationality, sex, race and class ...' (Hogg & Vaughan, 1995)
'... applying to an individual one's cognitive expectancies and associations about the group. As such, stereotypes represent one specific kind of schema ...' (Fiske, 2004)

The *process of stereotyping* involves the following reasoning:

- we assign someone to a particular group (for example, on the basis of their physical appearance)
- we bring into play the belief that all members of the group share certain characteristics (the stereotype), and
- we infer that this particular individual must possess these characteristics.

The basic method of studying ethnic stereotypes is that used by Katz & Braly (1933) in one of the earliest studies of its kind.

KEY STUDY 22.5 Studying stereotypes at Princeton (Katz & Braly, 1933)

- One hundred undergraduates at Princeton University, USA, were presented with a list of ethnic groups (Americans, Jews, Negroes, Turks, Germans, Chinese, Irish, English, Italians and Japanese) and 84 words describing personality.
- They were asked to list, for each ethnic group, the five or six traits that were 'typical' of that group.
- The aim was to find out whether traditional social stereotypes (as typically portrayed in newspapers and magazines) were actually held by Princeton students.
- In fact, they showed considerable agreement, especially about negative traits.
- Rather disturbingly, most of the students had had no personal contact with any members of most of the ethnic groups they had to rate. Presumably, they'd absorbed the images of those groups prevalent in the media.

Gilbert (1951) studied another sample of Princeton students, and this time found less uniformity of agreement (especially about unfavourable traits) than in the 1933 study. Many expressed great irritation at being asked to make generalisations at all. In 1967, Karlins *et al.* repeated the study (but reported their findings in 1969). Many students again objected to doing the task, but there was greater agreement compared with the 1951 study. There seemed to be a re-emergence of social stereotyping, but towards more favourable stereotypical images.

ASK YOURSELF...

- Do you think that stereotypes/stereotyping are inherently bad/wrong?
- Give reasons for your answer.

The traditional view of stereotypes: are they inherently bad?

For most of the time that psychologists have been studying stereotypes and stereotyping, they've condemned them for being both false and illogical, and dangerous, and people who use them have been seen as prejudiced and even pathological (see Chapter 25).

Table 22.3 The five traits most frequently assigned to four ethnic groups by three generations of Princeton students (from Brown, 1986)

Group	1933	1951	1967
Americans	industrious	materialistic	materialistic
	intelligent	intelligent	ambitious
	materialistic	industrious	pleasure-loving
	ambitious	pleasure-loving	industrious
	progressive	individualistic	conventional
Japanese	intelligent	imitative	industrious
	industrious	sly	ambitious
	progressive	extremely nationalistic	efficient
	shrewd	treacherous	intelligent
	sly		progressive
Jews	shrewd	shrewd	ambitious
	mercenary	intelligent	materialistic
	industrious	industrious	intelligent
	grasping	mercenary	industrious
	intelligent	ambitious	shrewd
Negroes	superstitious	superstitious	musical
	lazy	musical	happy-go-lucky
	happy-go-lucky	lazy	lazy
	ignorant	ignorant	pleasure-loving
	musical	pleasure-loving	ostentatious

Lippman (1922), for example, described stereotypes as selective, self-fulfilling and ethnocentric, constituting a 'very partial and inadequate way of representing the world'. The research started by Katz & Braly (1933) was intended to trace the link between stereotypes and prejudice: stereotypes are public fictions arising from prejudicial influences 'with scarcely any factual basis'. So, should they be dismissed as completely unacceptable?

According to Allport (1954), most stereotypes do contain a 'kernel of truth', and Lippman had recognised the categorisation processes involved in stereotyping as an important aspect of general cognitive functioning. Allport built on these ideas, arguing that 'The human mind must think with the aid of categories …'. However, he also believed that prejudiced people tend to make extremely simple *dichotomous* (either/or) judgements compared with tolerant, non-prejudiced people.

Asch (1952) also rejected the view of stereotyping as 'faulty processing'. In a great many situations, the behaviour of individuals (for example, members of audiences, committees, families, football teams, armies) is determined by their group membership. So, representing people in terms of these group memberships (stereotyping) could be seen as an important way of representing social reality. In keeping with his belief in Gestalt principles, Asch argued that groups have distinct psychological properties which cannot be reduced to the characteristics of the individual members (see Chapter 15).

Sherif (1967) also argued that stereotypes aren't in themselves deficient, but serve to reflect the reality of intergroup relations. Instead of asking if they are objectively true or accurate, we need to understand stereotypes in this *intergroup* context. To this extent, they are highly flexible, since changes in the relationship with other groups will result in changes to the stereotyped images of those groups (see Chapter 25). But according to Operario & Fiske (2004), it's precisely this broader context of stereotypes, reflected in social hierarchy and history, that defines their truly insidious nature.

CRITICAL DISCUSSION 22.1 : Do stereotypes reflect social power inequalities?

- The nature of social power dynamics and group hierarchy make stereotypes particularly oppressive for certain individuals and groups (Operario *et al.*, 1998). In particular:

  … individuals whose outcomes are controlled by others, and groups low in the social hierarchy, are vulnerable to the demeaning content of their stereotypes. Conversely, individuals who control others' outcomes, and groups near the top of the social hierarchy, are more likely to employ stereotypes about others … (Fiske, 1993)

- Because of their dependence on the powerful, the powerless direct their attention up the hierarchy and don't categorise those with power. But the powerful themselves are too busy, too unconcerned with accuracy, or too dominance-oriented to pay any attention to the powerless. They, therefore, tend to categorise and form highly stereotypical impressions of those over whom they can exert power (Oakes, 2004).
- Powerful people simply pay less individuating attention to their subordinates – that is, they treat them less as individuals, while the reverse is true for subordinate individuals and groups. According to Operario & Fiske (2004):

  … Not only does power perpetuate beliefs associated with social subordinates and minority groups, it also enables people to act upon stereotypical beliefs through legislation, economic policies, and institutional practices …

- A counterintuitive finding is the tendency for the powerless and disadvantaged to show biases that justify and maintain their group's low status (that is, they accept the status quo). This helps explain why social injustice can endure within cultural contexts that outwardly endorse egalitarianism and equality.
- But this isn't necessarily the same as *internalising* negative stereotypes. Members of low-status groups tend to acknowledge their group's disadvantaged status, but minimise perceptions of *personal* vulnerability to discrimination. In this way, they can maintain their self-esteem and personal control, and avoid feeling personally victimised (Operario & Fiske, 2004).

The changing face of stereotypes: are they 'normal' after all?

Almost all the researchers whose views of stereotyping we've discussed so far are American. According to Taylor & Porter (1994), there are compelling reasons why American psychologists should condemn stereotyping and wish to rid society of this evil. One of these is the political ideology, according to which everyone who lives in America is first and foremost 'American' regardless of the country they might have come from or their ethnic/cultural origins. This is the 'melting pot' idea, whereby differences are 'boiled away', leaving just one culture.



Rioting English soccer fans displaying stereotypical behaviour in Charleroi, Belgium, during Euro 2000

By contrast, European social psychologists, notably Tajfel, had been brought up in contexts where it was normal to categorise people into groups, where they expected society to be culturally diverse, and where people were proud of their cultural identities. From this personal experience, Tajfel and others mounted a challenge to the American view of stereotyping. Tajfel (1969), for example, reconceptualised stereotyping as the product of quite normal cognitive processes common to all (non-prejudiced) individuals. Specifically, it's a special case of *categorisation*, which involves an exaggeration of similarities within groups and of differences between groups (the *accentuation principle*). According to Oakes *et al.* (1994), Tajfel's contribution is widely seen as having been revolutionary. One effect of his ideas was to move researchers away from studying the *content* of stereotypes and towards the study of the *process of stereotyping* in its own right.

Stereotyping as a normal cognitive process

According to Brislin (1993):

> Stereotypes should not be viewed as a sign of abnormality. Rather, they reflect people's need to organise, remember, and retrieve information that might be useful to them as they attempt to achieve their goals and to meet life's demands ...

Stereotypes are 'categories about people' (Allport, 1954; Brislin, 1981), and categories in general, and stereotypes in particular, are shortcuts to thinking. From a purely cognitive point of view, there's nothing unique about stereotypes. They're universal and inevitable, 'an intrinsic, essential and primitive aspect of cognition' (Brown, 1986).

Lippmann (1922) himself argued that stereotypes serve a crucially important *practical* function:

> ... the real environment is altogether too big, too complex and too fleeting for direct acquaintance. We are not equipped to deal with so much subtlety, so much variety, so many permutations and combinations, And although we have to act in that environment, we have to reconstruct it on a simpler model before we can manage it.

ASK YOURSELF...

- How does this view of stereotyping relate to the view of the person as thinker (Fiske & Taylor, 1991: see above, page 378)?

According to the *cognitive miser* perspective, stereotypes are resource-saving devices. They simplify the processing of information about other people. As Fiske (2004) says:

> ... under the busy conditions of ordinary interaction, people can save cognitive resources by using stereotype-consistent information ...

This is a good example of the *selective* nature of person perception.

The accuracy of stereotypes

Definitions claim that stereotypes are *exceptionless generalisations* (see Table 22.2). But, clearly, the degree of generalisation involved is too great to make a stereotype factually true: no group is completely homogeneous, and individual differences are the norm. Yet in Katz and Braly's study, the instruction to list the traits typical of each ethnic/national group was taken to mean 'true of all members of each group' (Brown, 1986). However, the early studies never actually found out what participants understood by 'typical'. McCauley & Stitt (1978) attempted to rectify this.

KEY STUDY 22.6 What does the 'typical' mean in 'stereotypical'? (McCauley & Stitt, 1978)

- McCauley and Stitt chose Germans as the target group, plus three 'typical' traits (efficient/extremely nationalistic/scientifically minded), and two 'atypical' traits (pleasure-loving/superstitious).
- Junior college students were told they'd be asked a series of questions which they wouldn't be able to

answer exactly (e.g. 'What percentage of American cars are Chevrolets?'). Intermixed with these were critical questions about Germans – 'What percentage of Germans are efficient/extremely nationalistic/scientifically minded/pleasure-loving/superstitious?' and, corresponding to these, 'What percentage of people in the world generally are efficient/extremely nationalistic/scientifically minded/pleasure-loving/superstitious?'.

- The *diagnostic ratio* was calculated simply by dividing the percentage for Germans by the percentage for people in the world: anything over 1.00 represents a trait which belongs to the stereotype; anything below 1.00 represents a trait which doesn't.
- None of these values is even close to 100 per cent, so clearly 'typical' *doesn't* mean 'true of all'. 'Scientifically minded' isn't even attributed to a majority of Germans.

Table 22.4

Trait	% People in the world	% Germans	Diagnostic ratio
Efficient	49.8	63.4	1.27
Extremely nationalistic	35.4	56.3	1.59
Scientifically minded	32.6	43.1	1.32
Pleasure-loving	82.2	72.8	0.89
Superstitious	42.1	30.4	0.72

ASK YOURSELF...

- What do McCauley and Stitt's results tell us about the meaning of 'typical'?

What 'typical' seems to mean is *characteristic,* that is, true of a higher percentage of the group in question than of people in general (Brown, 1986). Stereotypes, then, seem to be *schemas* about what particular groups are like relative to 'people in general'. They *aren't* exceptionless generalisations. Perhaps this is how we should understand Allport's claim that stereotypes do contain a 'kernel of truth'.

Consistent with this conclusion, Operario & Fiske (2004) claim that stereotypes are more *ambivalent* than is commonly recognised: they comprise both positive and negative attributes about social groups. This makes their potency largely dependent on the social contexts in which they arise. This ambivalence is illustrated by the stereotypes of 'Negroes' in the Katz & Braly (1933) study (see Table 22.3). The blend of traits reflects an overall disparagement – but *not* utter repugnance.

Operario and Fiske claim that minority groups tend to be viewed as either (a) highly competent but not nice, or (b) extremely incompetent but nice, and stereotype content reflects this pattern.

ASK YOURSELF...

- Based on Operario and Fiske's distinction, which of the following groups would you classify as 'nice but incompetent' or 'not nice but competent': Jews, the mentally retarded, feminists, the blind, black professionals, housewives, business women, the elderly, Asians, the physically disabled?

According to Operario & Fiske (2004) you're likely to have answered as follows:

- 'nice but incompetent': the mentally retarded, housewives, the elderly, the physically disabled, the blind
- 'not nice but competent': feminists, business women, black professionals, Asians, Jews.

The beliefs associated with these two clusters reflect the particular group's relationship with the dominant majority (white, male, middle class, able-bodied). The first cluster presents no threat to the majority, while the second cluster poses a significant threat. However, research participants have become much more reluctant to engage in stereotyping over the past 80 years (Fiske, 2004), and stereotypes do *change.* For example, the most negatively rated groups in Katz & Braly's (1933) study (Negroes, Turks, Chinese) are now neutral or even slightly more positive than the most positively rated (Americans), who are rated less positively than they were (Leslie *et al.*, 2003).

Stereotypes, ingroups and outgroups

Instead of seeing comments such as 'They're all the same' as simply bigoted and discriminatory, research has shown that such statements may stem from the *outgroup homogeneity effect* (Quattrone, 1986). People tend to perceive members of an outgroup as highly similar to each other (stereotype), whereas they tend to see all kinds of individual differences among members of their own groups (the *ingroup differentiation hypothesis:* Linville *et al.*, 1989). These are consequences of the act of categorisation, and could be seen as an extension of Tajfel's accentuation principle (see above).

This differential perception of ingroup and outgroup members isn't necessarily indicative of outgroup prejudice, but is the natural outcome of social interaction patterns. We tend to interact with members of our own groups and therefore perceive differences within them. We may have limited interaction with other social groups, and this encourages a simplified social representation of these groups. In this context, it's both necessary and useful to see all outgroup members as similar. Ironically, study of the processes involved in stereotyping has suggested that it's the content that should – and can – be modified: the process itself may be 'hard-wired' as an element of human cognition, so that there's nothing we can do about it (Taylor & Porter, 1994).

Box 22.3 Stereotyping and the brain

- Adler (2000) cites research using EEG recordings to see what happens in people's brains when stereotypes are activated.
- He found that sentences in which gender stereotypes are violated (such as 'The surgeon prepared herself for the operation') provoke the same surge of electrical activity as sentences that don't make grammatical sense (such as 'The cat won't eating'). The telltale signal is a strong positive brainwave (the P600), which is often associated with surprise (see Chapter 7).
- The brains of men and women showed this reaction, even if they consciously found the sentence completely acceptable. Their brains seemed to be 'saying' one thing, and their overt responses something quite different.
- Other researchers have used MRI scans to measure the differing reactions in the amygdala of white participants to black and white faces. The amygdala is thought to act like a spotlight, focusing attention on frightening or other emotionally charged events (see Chapter 4). There's greater amygdala activity in response to black faces or race-related words and images.
- This dissociation between conscious beliefs and unconscious reactions supports the view that racial evaluations have a subtle influence on people's behaviour (Adler, 2000).

The *illusory correlation* (Chapman, 1967; Hamilton & Gifford, 1976) refers to the tendency to regard two variables that are unusual or distinct in some way, and which happen to become linked on one occasion, as always linked in that way (see Table 20.2, page 348). For example, if a member of a minority ethnic group is involved in a serious crime, majority group members are likely to associate the two, such that 'muggers are likely to be ...' becomes part of the negative stereotype of that group.

Stereotypes, expectations and memory

Buckhout (1974) gave participants a series of drawings in which some stereotypical pattern was violated. One drawing (based on Allport & Postman's (1947) experiment: see Chapter 21, page 360) showed a casually dressed white man threatening a well-dressed black man on a subway train, with the white man holding a razor. After seeing the picture briefly, approximately half the (white) participants 'remembered' seeing a black man holding a razor.

Similarly, Rothbart *et al.* (1979) found that people often recall better those facts that support their stereotypes (*selective remembering*), and Howard & Rothbart (1980) found that people have better recall of facts which are critical of the minority group than facts which are favourable (*negative memory bias*).

Duncan (1976) showed white participants a video of a discussion between two males, and told them it was a 'live' interaction over CCTV. At one point, the discussion became heated, and one actor gave the other a shove – the screen then went blank. Participants were asked to classify the shove as 'playing around', 'dramatising', 'aggressive behaviour' or 'violent behaviour'. Different participants saw different versions of the video, which differed only in the race of the two actors – two whites, two blacks, a white who shoved a black, or a black who shoved a white.



Figure 22.3 One of the drawings used by Buckhout (1974)

ASK YOURSELF...

- How do you think participants classified the shove under different conditions?
- How could you explain the results?
- What relevance do all the above studies have for eyewitness testimony (EWT) (see Chapter 21)?

Duncan found that many more participants classified the black man's shove as violent behaviour, especially if he shoved a white man.

Stereotypes, expectations and behaviour

Our expectations of people's personalities or capabilities may influence the way we actually treat them, which in turn may influence their behaviour in such a way that confirms our expectation (the *self-fulfilling prophecy*). This illustrates how stereotypes can (unwittingly) influence our behaviour towards others, and not just our perception and memory of them.

Stereotypes also affect our expectations of ourselves, which, in turn, can influence our behaviour. This may take place under naturalistic conditions and over a substantial period of time, as when members of minority groups internalise the negative stereotypes of them prevalent in the majority culture (see Chapter 25). But it can also happen under more artificial, experimental conditions in the short term.

KEY STUDY 22.7 How stereotypes can slow you down (Bargh *et al.*, 1996)

- College students were asked to unscramble sentences scattered with negative age-related words.
- Students who'd sorted sentences containing negative words walked down the corridor at the end of the experiment significantly more slowly, and remembered less about the experiment, than students who'd sorted neutral words.
- In an extension of Bargh *et al.*'s study, Dijksterhuis *et al.* (in Hogg & Abrams, 2000) asked participants to unscramble sentences containing words associated with negative stereotypes of the elderly. This primed the elderly stereotype, by making attributes of the elderly more accessible in participants' minds.
- Half were asked to make judgements about Princess Julianna (the 89-year-old Dutch Queen Mother). All the participants were then shown to the lifts, situated at the end of the corridor, and the time taken to reach them was recorded.
- Those who'd been primed with Princess Julianna walked significantly *faster*.

ASK YOURSELF...

- Try to explain the findings described in Key Study 22.7

The studies illustrate that when general stereotypes are activated, we may automatically adopt some of those characteristics ourselves. But when images of specific extreme individuals (exemplars) are activated, we automatically make a contrast between ourselves and the exemplar. This makes us react in the *opposite* way to how we think that person would react (Hogg & Abrams, 2000).

So, it's not stereotypes themselves which are dangerous or objectionable, but how they affect behaviour. While the experiments described above show that anyone can be affected by negative stereotypes, under normal circumstances it's the elderly who are affected by negative stereotypes of the elderly (see Chapter 39). The same applies, of course, to ethnic minority groups and race stereotypes, and to women and gender stereotypes (see Chapters 25 and 36). According to Operario & Fiske (2004):

> ... stereotypes are both (a) basic human tendencies inherent within our mental architecture; and (b) potentially damaging belief systems, depending on the power of the situation ...

INFLUENCING HOW OTHERS SEE US

Impression management

It's difficult to think of a social situation in which we're not trying (consciously or otherwise) to manipulate how others perceive us. This fundamental aspect of social interaction is referred to as *impression management* (or *self-presentation*) (Baumeister, 1982; Leary & Kowalski, 1990), which Turner (1991) defines as 'the process of presenting a public image of the self to others'. Sometimes we may be trying to influence particular people on a particular occasion, such as in a job interview, or we may be trying to maintain an image of ourselves (as a caring or competent person, for example).

According to Leary & Kowalski (1990), impression management can increase our subjective wellbeing by meeting three primary motivations:

1. maximising the reward of social relationships (*belonging:* its major function)
2. enhancing self-esteem (*self-enhancement*)
3. establishing desired identities (*self-understanding*).

It's widely agreed that we usually try to influence others in a positive way – that is, we want them to have a favourable impression of us (Schlenker, 1980; Turner, 1991).

In books such as *The Presentation of Self in Everyday Life* (1971), Goffman, the Canadian sociologist, offers a 'dramaturgical' analysis of social interaction. To create a successful impression requires the right setting, props (e.g. the way you're dressed), skills, and a shared understanding of what counts as 'backstage'. For example, the person who takes *self-disclosure* too far (see below), may be regarded as bringing on to stage what should be kept 'backstage', and so creates an unfavourable impression.



Woody Allen (in *Manhattan*) typically plays a character who's unlucky in love. This is partly due to his inappropriate self-disclosure

How is impression management carried out?

Impression management requires us to 'take the role of the other' (see Cooley and Mead's theories of self: Chapter 33). We must be able, psychologically, to step into someone else's shoes to see how we look from their viewpoint, and to adjust our behaviour accordingly. Fiske & Taylor (1991)

and Fiske (2004) identify several components of impression management, ways of adjusting our behaviour to take into account other people's viewpoints (see Table 22.5).

Table 22.5 Major components involved in impression management (based on Fiske & Taylor, 1991; Fiske, 2004)

In **behaviour matching**, we try to match the target person's behaviour. For example, if the other person is self-disclosing, we'll tend to do so to a comparable degree.
When we **conform to situational norms**, we use our knowledge of what's appropriate behaviour in a particular situation to adopt that behaviour ourselves. For every social setting, there's a pattern of social interaction which conveys the best identity for that setting (the 'situated identity'). **High self-monitors** (see text below) are more likely to make a favourable impression.
Appreciating or flattering others (**ingratiation**) can sometimes produce a favourable response from the target person, especially if it's done sincerely. But if seen for what it is, flattery (or laughing at their jokes etc.) can backfire on the flatterer, who'll be seen as deliberately trying to achieve his/her own ends (a hypocrite or sycophant: an 'arse-licker' in popular terminology).
If we show **consistency** among our beliefs, or between our beliefs and behaviour, we're more likely to impress other people favourably. Inconsistency is usually seen as a sign of weakness.
Our **verbal and non-verbal behaviours** should match, which they usually do if we're sincere. But if we're flattering, or in some other way being dishonest, the non-verbal channel will often 'leak', giving away our true feelings. When people perceive an inconsistency between what someone says and what they're trying to convey with their body, the latter is usually taken as revealing the 'true' message (Argyle *et al.*, 1972; Mehrabian, 1972).
Self-promotion is an attempt to be seen as *competent,* but this can conflict with the wish to be **liked**. Also, there's the danger of being seen as conceited and, at worst, a fraud.
Intimidation is meant to convey the impression of being **dangerous** ('don't mess with me'). But empty threats can produce a loss of credibility (as with parents and children).
In **exemplification**, the person wants to be seen as **worthy**, **moral** and **saintly**. The downside is being seen as sanctimonious, 'holier than thou' (a 'pain').
Supplication is the strategy of last resort. The aim is to be seen as **helpless** ('strategic incompetence'), but the downside is being perceived as lazy, calculating and manipulative.

Are some positive impressions more positive than others?

ASK YOURSELF...

- Can you think of any exceptions to the rule that we always try to create favourable impressions in others?
- Do we sometimes go about creating negative impressions in a defensive, self-protective way?

It isn't surprising that we're usually – and predominantly – motivated to be evaluated positively by others. After all, being regarded favourably by others is a prerequisite for many positive life outcomes (such as respect, friendship, romantic relationships and job success) (Leary, 2004). Sometimes, however, people believe that their interests will be best served by projecting an *unfavourable* impression, leading to a negative evaluation.

- If we're seen as emotionally unstable, this will reduce the demands others make on us. Similarly, if others see us as threatening or hostile, we'll more easily be able to coerce them into behaving in ways that we want (see Table 22.5).
- We may feel constrained by the impressions others already have of us, and we act in order to 'muddy the waters'. For example, if you're continually being told how good a son or daughter you are, the responsibility this places on you might encourage you to behave in the opposite fashion, so that you 'free yourself' from the expectation that you'll go on behaving dutifully and respectfully.
- You might protect yourself from anticipated failure by engaging in behaviours that will produce insurmountable obstacles to success. So, when the inevitable failure happens, you've a ready-made excuse (*behavioural self-handicapping*).
- Alternatively, you may blame, in advance, things about yourself that could explain the failure (apart from your lack of competence). For example, lecturers at exam time get quite used to students telling them how badly they're going to do because of lack of sleep, not having been well, having been unable to revise, always getting anxious about exams, and so on (*self-reported handicaps*).

One way of thinking about self-handicapping is to see it as an attempt to influence the kind of *attribution* other people make about our behaviour. We want them to see our failures as caused by factors 'beyond our control' and that don't, therefore, threaten the positive impression they have of us (and that we have of ourselves). Making excuses for, as well as confessing, our socially undesirable behaviour after it's occurred can also be explained in attributional terms (Weiner, 1992: see Chapter 23).

Self-monitoring

While people in general are concerned with the impressions they make on others, individuals differ in the extent to which they can and do exercise intentional control over their self-presentation. Although social psychology as a whole isn't concerned with individual differences, *self-monitoring* is profoundly social psychological. It refers to how much people attend to the social situation as guides for their behaviour, as opposed to their own

internal states (Snyder, 1974, 1987). *High self-monitors* are particularly talented in this way compared with *low self-monitors* (Snyder, 1995).

- *High self-monitors* are concerned with behaving in a socially appropriate manner, and so are more likely to monitor the situation (rather than themselves), looking for subtle cues as to 'how to behave'. They're more skilled in using facial expressions and their voices to convey particular emotions, and can interpret others' non-verbal communication more accurately compared with low self-monitors (Ickes & Barnes, 1977; Snyder, 1979). But carried to an extreme, their perceptiveness and social sensitivity can make them look like self-interested opportunists who change themselves and their opinions to suit the situation (Snyder, 1987). Their behaviour shows greater *cross-situational inconsistency* – they behave differently in different situations.
- *Low self-monitors* remain 'themselves' regardless of the situation, rarely adapting to the norms of the social setting. They monitor their behaviour in relation to their own enduring needs and values. Carried to an extreme, they can be seen as insensitive, inflexible and uncompromising (Snyder, 1987). They show greater *cross-situational consistency.*

Snyder (1987) has developed a pencil and paper test (the Self-Monitoring Scale), which comprises a number of statements with which the respondent has to agree or disagree. Some examples are given in Table 22.6.

Table 22.6 Some sample items from the self-monitoring scale (Snyder, 1987, in Snyder, 1995)

High scorers will tend to agree with the following:
• I would probably make a good actor.
• I'm not always the person I appear to be.
• In different situations and with different people, I often act like very different persons.
Low scorers will tend to agree with the following:
• I have trouble changing my behaviour to suit different people and different situations.
• I can only argue for ideas which I already believe.
• I would not change my opinions (or the way I do things) in order to please someone else or win their favour.

According to Fiske (2004):

Both levels of self-monitoring can be useful in the social world. Groups need people who are sensitive to norms and flexible about adjusting to them, and groups also need people who stand up for enduring principles, so a mix of high and low self-monitors is arguably good for group survival.

Self-disclosure

How accurately others perceive us is determined partly by how much we reveal to them about ourselves (*self-disclosure*). Wiemann & Giles (1988) define it as 'the voluntary making available of information about one's self that would not ordinarily be accessible to the other at that moment'.

According to Jourard (1971), we disclose ourselves through what we say and do (as well as what we omit to say and do). This means that we have greater control over some aspects of self-disclosure than others since, generally, we have greater control over verbal than non-verbal behaviour. However, Jourard believes that the decision to self-disclose (or to become 'transparent') is one taken freely, and the aim in disclosing ourselves is to 'be known, to be perceived by the other as the one I know myself to be'. Jourard believes that we can learn a great deal about ourselves through mutual self-disclosure, and our intimacy with others can be enhanced. It's a way of both achieving and maintaining a healthy personality, but only if the self-disclosure meets the criterion of *authenticity* (or honesty).

ASK YOURSELF...

- Think of your various relationships. What determines the nature and extent of what you disclose to other people?

Factors influencing disclosure

- *Reciprocity:* The more personal the information we disclose to someone, the more personal the information they're likely to disclose to us. This relates to the *norm of reciprocity* (Gouldner, 1960), according to which our social behaviours 'demand' an equivalent response from our partners. We might sometimes feel the other person is giving too much away (or doing so too quickly), but we're still likely to reveal more about ourselves than we otherwise would.
- *Norms:* The situation we're in often determines how much (or what kind of) disclosure is appropriate. For instance, it's acceptable for someone we meet at a party to tell us about their job, but not to reveal details about medical problems or political beliefs.
- *Trust:* Generally, the more we trust someone, the more prepared we are to self-disclose to them.
- *Quality of relationships:* Altman & Taylor's (1973) *social penetration theory* maintains that the more intimate we are with somebody, the greater the range of topics we disclose to them and the more deeply we discuss any particular topic. Equally, a high degree of mutual self-disclosure can enhance the intimacy of the relationship, and is an excellent predictor of whether couples stay together over a four-year period (see Chapter 28).

- *Gender:* Women generally disclose more than men, and Jourard (1971) argues that men's limited self-disclosure prevents healthy self-expression and adds stress to their lives.

CONCLUSIONS

It would be quite appropriate to begin a textbook on psychology with a chapter on social perception. Since most of us are, by definition, neither psychologists nor any other kind of scientist in a literal sense, the person-as-psychologist is a metaphor. However, it combines two essential truths about human beings:

1. science (including psychology) is conducted by people and, as far as we know, is uniquely human
2. observing, explaining, predicting, and trying to control others' behaviour are activities shared by professional psychologists and all other human beings.

CHAPTER SUMMARY

- **Interpersonal perception** refers to how we all attempt to explain, predict and to some degree control the behaviour of other people. In these ways, we can all be thought of as psychologists.
- Although social psychology in general, and interpersonal perception in particular, has always been concerned with the content of people's thoughts about others, **social cognition** emphasises the **information-processing approach**.
- Both object and person perception involve **selection**, **organisation** and **inference**. But only people behave, interact with each other, perceive and experience.
- **Social phenomenologists** regard **experience**, rather than behaviour, as the major source of 'data' in social interaction.
- Four views of people as thinking organisms have been identified, seeing us as **consistency seekers**, **naïve scientists**, **cognitive misers** and **motivated tacticians**.
- As cognitive misers, we use **heuristics** as shortcuts to thinking, including **availability**, **representativeness**, **simulation** and **anchoring**.
- **Social representations** (SRs) refer to 'common sense', simplified, widely shared understanding of complex theories and ideas, and involve **personification** and **figuration**.
- **Central traits** exert a major organising influence on our overall impression of a person, while **peripheral traits** have little or no influence. An alternative, but not contradictory explanation, is that overall impressions and inferences about additional traits reflect our **implicit personality theories** (IPTs).
- While most of the evidence supports a **primacy effect** with regard to strangers, a **recency effect** may be more powerful with regard to people we know well.
- The **halo effect** is one kind of IPT, which enables us to infer what people are like when we have only limited information about them. IPTs may be based on people's names, and their physical attractiveness.
- **Stereotypes** represent a special kind of IPT, and they characterise entire **groups**. Traditionally, American researchers studied stereotypes in relation to prejudice, and regarded them as false, illogical **overgeneralisations**.
- European psychologists saw the **categorisation** of people as normal and expected. From a cognitive point of view, stereotyping is a normal mental shortcut.
- The act of categorising people produces the **accentuation principle**, the **outgroup homogeneity effect**, and the **ingroup differentiation hypothesis**. The **illusory correlation** can help explain the formation of negative stereotypes of minority groups.
- **Stereotyping** affects **attention**, **perception** and **memory**. Stereotypes may also influence people's **behaviour** towards members of outgroups, as well as the behaviour of outgroup members themselves through the **self-fulfilling prophecy**.
- We try actively to influence the impression that others form of us through **impression management/self-presentation**. Strategies used to create favourable impressions include **behaviour matching**, **appreciating/flattering others**, **showing consistency among our beliefs**, and **matching our verbal and non-verbal behaviours**.
- **High self-monitors** try to match their behaviour to the situation, while **low self-monitors** are more likely to 'be themselves'.
- Important factors that influence **self-disclosure** include **reciprocity**, **norms**, **trust**, **quality of relationship**, and **gender**.

Links with other topics/chapters

- Perception of people has much in common with *object perception* (Chapter 15).
- Social cognition is built on *attribution theories,* which originated with Heider's (1958) account of the *naïve scientist* (Chapter 23).
- Consistency is a concept central to many *theories of attitude change* (Chapter 24) and *minority influence* (Chapter 26).
- Social representations (SRs) are the basis of much *racist talk/discourse* (Chapter 25). Social representation theory is also a major *social constructionist* approach (Chapter 2)
- Asch's research into impression formation was heavily influenced by the *Gestalt principles of perceptual organisation* (Chapter 15).
- Stereotypes represent the *cognitive component of attitudes* (Chapter 24), and *prejudice* may be thought of as an *extreme attitude* (Chapter 25).

- Stereotypes can help explain *selective remembering* and the *negative memory bias* (Chapter 17).
- Impression management/self-presentation is relevant to *interpersonal attraction:* instead of simply sitting back and letting others be impressed (or not), we can take an active role in making ourselves likeable to others (Duck, 1988: Chapter 28).
- According to Turner (1991), several studies suggest that concerns with self-presentation may underlie a whole range of phenomena, including *bystander intervention* (Chapter 30), *aggression and deindividuation* (Chapter 29), *conformity* (Chapter 26) and *cognitive dissonance* (Chapter 24).

Attribution and the naïve scientist
Heider's 'common-sense' psychology
Jones and Davis's correspondent inference theory (CIT)
Correspondent inferences and intentionality
The analysis of uncommon effects
Other factors affecting dispositional attributions
An evaluation of Jones and Davis's CIT
Kelley's covariation and configuration models
The covariation model
Evaluation of Kelley's covariation model
The configuration model
Causal schemata
Weiner's attributional theory of emotion and motivation
Error and bias in the attribution process
The fundamental attribution error (FAE)
The FAE and the just world hypothesis (JWH)
The actor–observer effect (AOE)
The self-serving bias (SSB)
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Conclusions
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23

ATTRIBUTION



INTRODUCTION AND OVERVIEW

As we noted at the beginning of Chapter 22, attribution is an important aspect of social perception, theories of which flourished during the 1950s to the 1970s. Most of our impressions of others are based on their overt behaviour, and the setting in which it occurs. How we judge the causes of someone's behaviour (the 'actor') will have a major influence on the impression we form about them. Was their behaviour something to do with them 'as a person', such as their motives, intentions or personality (an *internal* cause)? Or was it something to do with the situation, including some other person or some physical feature of the environment (an *external* cause)?

Unless we can make this sort of judgement, we cannot really use the person's behaviour as a basis for forming an impression of them. Although we might mistakenly attribute the cause to the person instead of the situation, an attribution still has to be made.

Attribution theory deals with the general principles governing how we select and use information to arrive at causal explanations for behaviour. *Theories of attribution* draw on the principles of attribution theory, and predict how people will respond in particular situations (or *life domains:* Fiske & Taylor, 1991).

Rather than being a single body of ideas and research, attribution theory is a collection of diverse theoretical and empirical contributions sharing several common concerns (or mini-theories: Antaki, 1984). Six different traditions form the 'backbone' of attribution theory (Fiske & Taylor, 1991). These are: Heider's (1958) *'common-sense' psychology,* Jones & Davis's (1965) *correspondent inference theory,* Kelley's (1967, 1972, 1983) *covariation* and *configuration models,* Schachter's (1964) *cognitive labelling theory* (of emotion: see Chapter 10), Bem's (1967, 1972) *self-perception theory* (of attitude change: see Chapter 24), and Weiner's (1986) *attributional theory of motivation.*

The models and theories of Heider, Jones and Davis, and Kelley see people as being logical and systematic in their explanations of behaviour. In practice, however, people tend to make attributions quickly, based often on very little information, and show clear tendencies to offer certain types of explanation for particular behaviours (Hewstone & Fincham, 1996). As Fiske (2004) says:

> ... Using an intuitive and relatively automatic process, people do not think about making attributions; they just do it. People are experts at understanding other people – at least we all think we are – but we do not actually understand how we do it until we reflect on it. And attribution theory is one way of systematically reflecting on it.

ATTRIBUTION AND THE NAÏVE SCIENTIST

The process by which we make judgements about internal/external causes is called the *attribution process,* which was first investigated by Heider (1958). In a famous study, Heider & Simmel (1944) demonstrated the strength of the human tendency to explain people's behaviour in terms of intentions, by showing that we sometimes attribute intentions to inanimate objects!

KEY STUDY 23.1 Even geometrical figures have intentions (Heider & Simmel, 1944)

- Heider and Simmel showed animated cartoons of three geometrical figures (a large triangle, a smaller triangle and a disc) moving around, in and out of a large square.
- Participants tended to see them as having human characteristics and, in particular, as having intentions towards each other.
- A common perception was to see the two triangles as two men in rivalry for a girl (the disc), with the larger triangle being seen as aggressive and a bully, the smaller triangle as defiant and heroic, and the disc as timid. (Compare this with what Piaget calls *animism* in the child: see Chapter 34.)

We noted in Chapter 22 that there's a sense in which we're all psychologists. Perhaps this is most apparent in the case of attribution theory, which promises to:

> ... uncover the way in which we, as ordinary men and women, act as scientists in tracking down the causes of behaviour; it promises to treat ordinary people, in fact, as if they were psychologists ... (Antaki, 1984)

Heider's 'common-sense' psychology

Heider (1958) argued that the starting point for studying how we understand the social world is the 'ordinary' person. He asked 'How do people usually think about and infer meaning from what goes on around them?' and 'How do they make sense of their own and other people's behaviours?' These questions relate to what he called 'common-sense' psychology. In Heider's view, the 'ordinary' person is a naïve scientist who links observable behaviour to unobservable causes, and these *causes* (rather than the behaviour itself) provide the meaning of what people do.

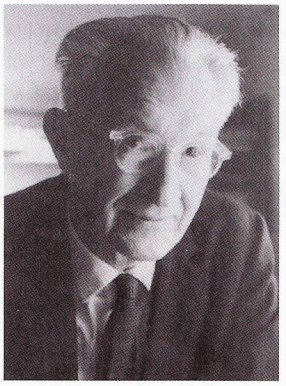
What interested Heider was the fact that members of a culture share certain basic assumptions about behaviour. These assumptions belong to the belief system that forms part of the culture as a whole, and distinguishes one culture from another. As Bennett (1993) has observed:

> It is important that we do subscribe to a common psychology, since doing this provides an orienting context in which we can understand, and be understood by, others. Imagine a world in which your version of everyday psychology was fundamentally at odds with that of your friends – without a shared 'code' for making sense of behaviour, social life would hardly be possible.

ASK YOURSELF...

- Can you see any parallels between Heider's common-sense psychology and Moscovici's social representations? (See Chapter 22.)

As we noted in the *Introduction and overview,* we explain people's behaviour in terms of *dispositional* (or personal/internal) factors, such as ability or effort, and *situational* (or environmental/external) factors, such as circumstances or luck. When we observe somebody's behaviour, we're inclined to attribute its cause to one or other of these two general sources. This represents one of these culturally shared beliefs about behaviour that forms part of common-sense psychology.



Fritz Heider (1896–1988)

Although Heider didn't formulate his own theory of attribution, he inspired other psychologists to pursue his original ideas. As well as his insight relating to personal and situational factors as causes of behaviour, three other ideas have been particularly influential (Ross & Fletcher, 1985):

1. when we observe others, we tend to search for enduring, unchanging, and dispositional characteristics
2. we distinguish between intentional and unintentional behaviours
3. we're inclined to attribute behaviours to events (causes) that are present when the outcome is present, and absent when the outcome is absent.

JONES AND DAVIS'S CORRESPONDENT INFERENCE THEORY (CIT)

Correspondent inferences and intentionality

Jones & Davis (1965) were very much influenced by Heider. They argued that the goal of the attribution process is to be able to make *correspondent inferences.* We need to be able to infer that both the behaviour and the intention that produced it correspond to some underlying, stable feature of the person (a *disposition*). An inference is 'correspondent' when the disposition attributed to an actor 'corresponds' to the behaviour from which the disposition is inferred. For instance, if someone gives up his seat on the bus to allow a pregnant woman to sit down, we'd probably infer that he's 'kind and unselfish'. This is a correspondent inference, because both the behaviour and the disposition can be labelled in a similar way ('kind and unselfish'). But if we attribute the behaviour to compliance with someone else's demands ('he' is a husband whose wife has told him to give up his seat), then we wouldn't be making a correspondent inference.

According to Jones and Davis, a precondition for a correspondent inference is the attribution of *intentionality,* and they specify two criteria or conditions for this. We have to be confident that the actor:

- is capable of having produced the observed effects, and
- knew the effects the behaviour would produce.

The analysis of uncommon effects

Having made these preliminary decisions, how do we then proceed to infer that the intended behaviour is related to some underlying disposition? One answer is the *analysis of uncommon effects.* When more than one course of action is open to a person, a way of understanding why s/he chose one course rather than another is to compare the consequences of the chosen option with the consequences of those that weren't. In other words, what's *distinctive* (or *uncommon*) about the effects of the choice that's made?

For example, you've a strong preference for one particular university, even though there are several that are similar with regard to size, reputation, type of course and so on. The fact that all the others require you to be in residence during your first year suggests that you've a strong preference for being independent and looking after yourself.

Generally, the fewer differences between the chosen and the unchosen alternatives, the more confidently we can infer dispositions. Also, the more negative elements involved in the chosen alternative, the more confident still we can be of the importance of the distinctive consequence. (If living out of residence means a lot of extra travelling, or is more expensive, then the desire to be self-sufficient assumes even greater significance.)

Other factors affecting dispositional attributions

Because the analysis of uncommon effects can lead to ambiguous conclusions, other cues must also be used.

- *Choice* is self-explanatory: is the actor's behaviour influenced by situational factors, or a result of free will?
- *Social desirability* relates to the norms associated with different situations. Because most of us conform most of the time, the need to explain other people's behaviour doesn't often arise. We base our impressions of others more on behaviour which is in some way unusual, novel, bizarre, or antisocial, than on behaviour that's expected or conventional.

ASK YOURSELF...

- Do you agree with this account of social desirability?
- Give your reasons.
- Can you think of an example from your own experience, or something in the media, that is consistent with Jones and Davis's account?

'Deviant' behaviour seems to provide more information about what the person is like, largely because when we behave unconventionally we're more likely to be

ostracised, shunned or disapproved of (which, presumably, people don't want).

For example, at a funeral people are expected to dress soberly, look sad and talk respectfully of the deceased. So, when we observe such behaviour, we can easily attribute it to the situation ('That's how one acts at funerals'). But if somebody arrives in brightly coloured clothes, making jokes, and talking disrespectfully of the deceased, s/he is 'breaking the rules'. His/her behaviour needs explaining, and we're likely to attribute it to personal/dispositional characteristics. This was demonstrated in an experiment by Jones *et al.* (1961).

KEY STUDY 23.2 If you want to be an astronaut, be a loner (Jones *et al.*, 1961)

- Participants heard a tape-recording of a job interview, where the applicant was, supposedly, applying to be an astronaut or a submariner.
- Prior to hearing the tape, participants were informed of the ideal qualities for the job: astronauts should be inner-directed and able to exist without social interaction, while submariners should be other-directed and gregarious.
- The participants believed the candidates also understood these ideal qualities.
- The tape presented the candidate as either displaying these qualities or behaving in the opposite way, and participants had to give their impressions of the candidate.
- When the candidate behaved in the *opposite* way, participants more confidently rated him as actually being like that, compared with those who heard a 'conforming' candidate.

Social desirability can also be explained in terms of the *positivity bias.*

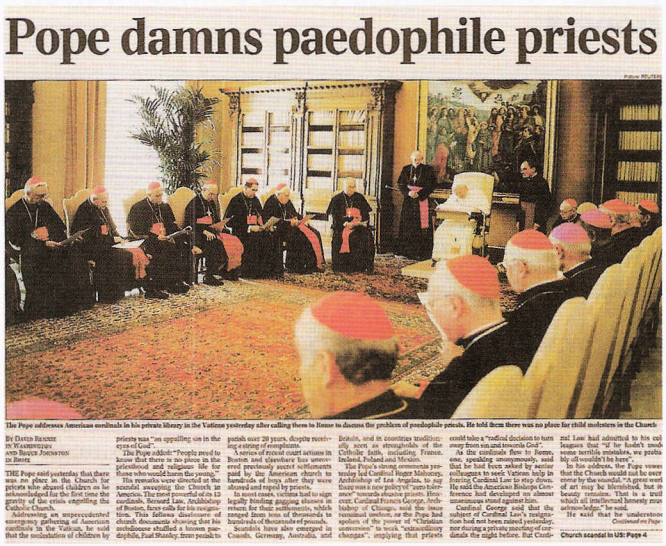
Box 23.1 The positivity bias, vigilance and the 'Pollyanna principle'

- We usually see people as 'good', trustworthy, and so on (the *positivity bias*) (Fiske, 2004).
- According to the 'Pollyanna principle' (Matlin & Stang, 1978), people seek the pleasant and avoid the unpleasant, communicate good news more often than bad, judge pleasant events as more likely than unpleasant events, recall pleasant life experiences more accurately than unpleasant experiences, rate themselves better than the average and as more happy than not, and evaluate each other positively.
- Also, desirable traits are perceived as more common than undesirable traits (Rothbart & Park, 1986).
- North Americans, at least, view their future as unequivocally positive (Ross & Newby-Clark, 1998), and positive words even outnumber negative words in most languages (Zajonc, 1998).

... The positivity assumption, then, is widespread in people's expectations about life experiences, but people expect positive outcomes from other people even more than from events in general ... positivity implies approach rather than avoidance, so it encourages interaction with other people and the environment ... (Fiske, 2004)

- Positivity is offset by *vigilance:* unexpected bad behaviour grabs people's attention. Why is this?
- According to Fiske: (a) if negative events are perceived as rare, they should provide more information about the individual – they set the person apart from the norm; (b) negative events might also be more diagnostic – that is, allow more confident categorisation of the person as a particular kind or other, regardless of the norm.

◎ *Roles* refer to another kind of conformity. When people in well-defined roles behave as they're expected to, this tells us relatively little about their underlying dispositions (they're 'just doing their job'). But when they display out-of-role behaviour, we can use their actions to infer 'what they're really like'. This is similar to the effects of social desirability, except that the norms are associated with particular social positions within an overall social context, rather than with the context or situation itself.



Pope damns paedophile priests

The Pope addresses American cardinals in his private library in the Vatican yesterday after calling them to Rome to discuss the problem of paedophile priests. He told them there was no place for child molesters in the Church

BY DAVID BENNET IN WASHINGTON AND ROGER JOHNSTON IN ROME

THE Pope said yesterday that there was no place in the Church for priests who abused children as he acknowledged for the first time the gravity of the crisis engulfing the Catholic Church.

His unprecedented, unprecedented meeting with the cardinals in the Vatican, he said that the molestation of children by priests was "an appalling sin in the eyes of God".

The Pope added: "People need to know that there is no place in the priesthood and religious life for those who would harm the young."

His remarks were directed at the scandal ravaging the Church in America. The most powerful of its 13 cardinals, Bernard Law, Archbishop of Boston, faces calls for his resignation after the full disclosure of church files showing that his archdiocese shuffled a known paedophile, Paul Shanley, from parish to parish over 20 years, despite receiving a string of complaints.

A series of recent court actions in Boston and elsewhere has uncovered previously secret settlements paid by the American church to hundreds of boys after they were abused and raped by priests.

In most cases, victims had to sign legally binding gagging clauses in return for their settlements, which ranged from a few thousand to hundreds of thousands of pounds.

Scandals have also emerged in Britain, and in countries traditionally seen as strongholds of the Catholic faith, including France, Ireland, Poland and Mexico.

The Pope's strong comments yesterday led Cardinal Roger Mahony, Archbishop of Los Angeles, to say: "There was a new policy of 'zero tolerance' towards abusive priests. However, Cardinal Francis George, Archbishop of Chicago, said the moral authority of the Pope and the bishops of the synod of "Christian conversion" to seek "extraordinary changes", implying that priests could take a "radical decision to turn away from sin and towards God".

As the cardinals flew to Rome, one, speaking anonymously, said that he had been asked by senior colleagues to seek Vatican help in forcing Cardinal Law to step down. He said the American Bishops Conference "towards abusive priests. However, Cardinal Francis George, Archbishop of Chicago, said the moral authority of the Pope and the bishops of the synod of "Christian conversion" to seek "extraordinary changes", implying that priests

Cardinal George said he expected Cardinal Law to resign. "The situation had not been raised yesterday nor during a private meeting of cardinals the night before. But Cardinal Law had admitted to his colleagues that "if he hadn't made some terrible mistakes, we probably wouldn't be here".

In his address, the Pope vowed that the Church would not be overcome by the scandal. "A green sort of art may be literature, but of beauty remains. That is a fruit which all the powerful enemy cannot wither-hedge," he said.

He said that the understanding

Church scandal in US: Page 4

◎ *Prior expectations* are based on past experiences with the same actor. The better we know someone, the better placed we are to decide whether his/her behaviour on a particular occasion is 'typical'. If it's 'atypical', we're more likely to dismiss it, or play down its significance, or explain it in terms of situational factors.

An evaluation of Jones and Davis's CIT

While there are data consistent with Jones and Davis's theory, several weaknesses have been identified.

- Eiser (1983) has argued that intentions aren't a precondition for correspondent inferences. When someone is called 'clumsy', that dispositional attribution doesn't imply that the behaviour was intentional. In Eiser's view, behaviours which are unintended or accidental are beyond the scope of Jones and Davis's theory.
- Also, it isn't just undesirable or unexpected behaviour that's informative. 'Conforming' behaviour can also be informative, as when behaviour confirms a stereotype (Hewstone & Fincham, 1996: see Chapter 22, page 388).
- Although CIT continues to attract interest, most of the studies supporting it didn't measure causal attributions (Gilbert, 1995). Indeed, the model focuses on the covariation (correlation) of actions and their *consequences* as the key to attribution (Fiske, 2004). Inferring a disposition isn't the same as inferring a cause, and each appears to reflect different underlying processes (Hewstone & Fincham, 1996).
- Both of Kelley's models discussed next are concerned with the processes that determine whether an internal or external attribution is made for a behaviour's cause. Focusing on the covariation of actions and their potential causes is *complementary* to CIT (Fiske, 2004).

KELLEY'S COVARIATION AND CONFIGURATION MODELS

ASK YOURSELF...
- One of your fellow students (let's call her Sally) is late for psychology class one morning. How might you explain her late arrival?
- What kinds of information would you need in order to make a causal attribution?

The covariation model

Kelley's *covariation model* (1967) tries to explain how we make causal attributions where we have some knowledge of how the actor usually behaves in a variety of situations, and how others usually behave in those situations. The principle of covariation states that:

An effect is attributed to one of its possible causes with which, over time, it covaries.

In other words, if two events repeatedly occur together, we're more likely to infer that they're causally related than if they very rarely occur together. If the behaviour to be explained is thought of as an *effect*, the *cause* can be one of three kinds, and the extent to which the behaviour covaries with each of these three kinds of possible cause is what we base our attribution on. To illustrate the three kinds of causal information, let's take the hypothetical example of Sally, who's late for her psychology class.

- *Consensus* refers to the extent to which other people behave in the same way. In this example, are other students late for psychology? If all (or most) other students are late, then consensus is *high* (she's in good company), but if only Sally is late, consensus is *low*.
- *Distinctiveness* refers to the extent to which Sally behaves in a similar way towards other, similar, 'stimuli' or 'entities'. Is she late for other subjects? If she is, then distinctiveness is *low* (there's nothing special or distinctive about psychology), but if she's late only for psychology, then distinctiveness is *high*.
- *Consistency* refers to how stable Sally's behaviour is over time. Is she regularly late for psychology? If she is, consistency is *high*, but if she's not (this is a 'one-off'), then consistency is *low*.

Kelley believes that a combination of *low consensus* (Sally is the only one late), *low distinctiveness* (she's late for all her subjects), and *high consistency* (she's regularly late) will lead us to make a *person* (*internal* or *dispositional*) attribution. In other words, the cause of Sally's behaviour is something to do with Sally, such as being a poor timekeeper.

However, any other combination would normally result in an external or situational attribution. For example, if Sally is generally punctual (*low consistency*), or if most students are late for psychology (*high consensus*), then the cause of Sally's lateness might be 'extenuating circumstances' in the first case or the subject and/or the lecturer in the second.

Table 23.1 Causal attributions based on three different combinations of causal information (based on Kelley, 1967)

Consensus	Distinctiveness	Consistency	Causal attribution
Low	Low	High	Person (actor/internal)
Low	High	Low	Circumstances (external)
High	High	High	Stimulus/target (external)

Evaluation of Kelley's covariation model

ASK YOURSELF...
- Can you relate consensus, distinctiveness and consistency information to components of Jones and Davis's correspondent inference theory?

- According to Gilbert (1998), the similarities between Kelley's covariation model and CIT are often overlooked: (a) *consensus* is similar to Jones and Davis's *social*

desirability (if consensus is high, then the behaviour is socially desirable); (b) *distinctiveness* is similar to Jones and Davis's concern with *uncommon/unique effects* (the more distinctive the choice, the more it has to do with the unique effects of the choice); (c) *consistency* reflects an enduring *disposition* (as opposed to temporary circumstances).

- A number of empirical studies have found support for Kelley.

KEY STUDY 23.3 A funny thing happened on the way to the laboratory (McArthur, 1972)

- McArthur presented participants with one-sentence descriptions of various behaviours relating to emotions, accomplishments, opinions and actions (for example, 'John laughs at the comedian', 'Sue is afraid of the dog', 'George translates the sentence incorrectly').
- Each description was accompanied by *high or low consensus information* ('Almost everyone ...' or 'Hardly anyone ...'), *high or low distinctiveness information* (this person does/does not respond the same way to 'almost every other ... comedian ... dog, etc.'), and *high or low consistency information* ('In the past ... has almost always ...' or 'almost never').
- The task was to attribute each behaviour to (a) characteristics of the actor, (b) the stimulus (target), (c) circumstances, or (d) some combination of these.
- Predictions based on Kelley's model were strongly supported.

- However, not all three types of causal information were used to the same extent. Distinctiveness influenced entity attributions the most, and consistency influenced circumstances attribution the most. Also, *contrary* to predictions, consensus *didn't* influence person attributions the most.
- Other laboratory studies have also found this uneven use of the three kinds of causal information. For example, Major (1980) found that participants show a marked preference for consistency over the other two, with consensus being the least preferred.
- Similarly, Nisbett & Borgida (1975) found surprisingly weak effects of consensus information when they asked university students to explain the behaviour of a participant in a psychology experiment. This participant, like most others involved, had agreed to tolerate a high level of electric shock. But the students who were told that 16 of the 34 participants had tolerated the highest possible shock level, were *no more likely* to make situational attributions than those who had been given no consensus information at all. According to Nisbett and Borgida, people's judgements are less responsive to the dull and abstract base rates that constitute consensus information than to the more vivid information regarding the behaviour of one, concrete target person.
- However, consensus information can have more of an impact if it's made more salient (for example, if it's contrary to what we might expect most people to do: Wells & Harvey, 1977).
- Consistent with Wells and Harvey's proposal is Hilton & Slugoski's (1986) *abnormal conditions focus model*. This can help explain why the three types of causal information aren't used to the same extent.

Box 23.1 The abnormal conditions focus model (Hilton & Slugoski, 1986)

- According to Hilton and Slugoski, Kelley's three types of information are useful to the extent that the behaviour requiring explanation contrasts with the information given. So, with *low consensus* information, the *person* is abnormal, whereas with *low consistency* information the *circumstances* are abnormal. With *high distinctiveness* information, the *stimulus/target* is abnormal.
- Another way of looking at 'abnormality' is, in Table 23.1, to read down the columns. Two 'values' are the same, and different from the third. For example, *high consensus* (the 'odd one out') corresponds to the *stimulus/target*, *low distinctiveness* corresponds to the *person/actor*, and *low consistency* corresponds to the *circumstances*.
- Here, then, 'abnormal' is taken to refer to the causal *information*, rather than the causal attribution. But the end result seems to be the same.
- The model proposes that we attribute as a cause the necessary condition that's abnormal when compared with the background of the target event (Slugoski & Hilton, 2000).

- Just because people make attributions as if they're using covariation 'rules', doesn't necessarily mean they are (Hewstone & Fincham, 1996). Kelley seems to have overestimated people's ability to assess covariation. He originally compared the social perceiver to a naïve scientist (as did Heider), trying to draw inferences in much the same way as the formal scientist draws conclusions from data. More significantly, it's a *normative* model which states how, ideally, people should come to draw inferences about others' behaviour. However, the actual procedures that people use aren't as logical, rational and systematic as the model suggests. (This criticism also applies to Jones and Davis's CIT: see the section on error and bias, below.)

The configuration model

Kelley recognised that in many situations (most notably when we don't know the actor), we might not have access to any or all of the covariation model's three types of information. Indeed, often the only information we have is a single occurrence of the behaviour of a particular individual. Yet we still feel able to explain the behaviour. The configuration model was Kelley's attempt

to account for attributions about such single occurrence behaviours.

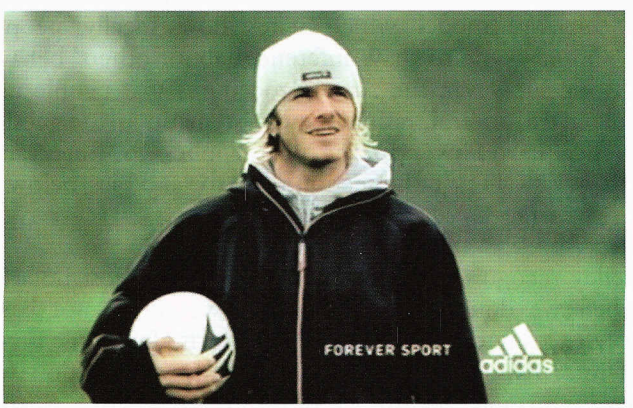
Causal schemata

When we make 'single event attributions' we do so using *causal schemata* (Kelley, 1972, 1983). These are general ideas (or ready-made beliefs, preconceptions, and even theories: Hewstone & Fincham, 1996) about 'how certain kinds of causes interact to produce a specific kind of effect' (Kelley, 1972). According to Fiske & Taylor (1991), causal schemata provide the social perceiver with a 'causal shorthand' for making complex inferences quickly and easily. They're based on our experience of cause–effect relationships, and what we've been taught by others about such relationships. They come into play when causal information is otherwise ambiguous and incomplete.

The two major kinds of causal schemata are *multiple necessary schemata* and *multiple sufficient schemata*.

Box 23.2 Multiple necessary and multiple sufficient schemata

- **Multiple necessary causes:** Experience tells us that to win a marathon, for example, you must not only be fit and highly motivated, but you must have trained hard for several months beforehand, you must wear the right kind of running shoes and so on.
- Even if all these conditions are met, there's no guarantee of success, but the absence of any one of them is likely to produce failure. So, in this sense, success is more informative than failure. Thus, there are many causes needed to produce certain behaviours – typically, those which are unusual or extreme.
- **Multiple sufficient causes:** With some behaviours, any number of causes are sufficient to explain their occurrence. For example, a footballer who advertises shampoo may do so because he genuinely believes it's a good product, or because he's being paid a large sum of money to advertise it – either of these is a sufficient cause.



David Beckham, almost as famous for his promotion of Adidas as for playing football

ASK YOURSELF...

- In this last example, do you think one of the proposed causes is more likely to be the real cause than the other (believing in the product or receiving a large fee)?
- If so, which one?
- What do you base this attribution on?

Since it's reasonable to assume that it's the fee which accounts for the footballer's appearance in the commercial, we're likely to reject the other cause ('belief' in the product) according to the *discounting principle* (Kelley, 1983). According to this:

> Given that different causes can produce the same effect, the role of a given cause is discounted if other plausible causes are present.

Multiple sufficient schemata are also associated with the *augmenting principle* (Kelley, 1983). This states that:

> The role of a given cause is augmented or increased if the effect occurs in the presence of an inhibitory factor.

So, we're more likely to make an internal attribution (to effort and ability) when a student passes an exam after (say) suffering the death of a relative, than would be the case for a student who'd passed without having suffered such a loss.

WEINER'S ATTRIBUTIONAL THEORY OF EMOTION AND MOTIVATION

As the name suggests, Weiner's (1986) theory is really an application of basic attributional principles to human emotion and motivation (see Chapters 9 and 10). According to Weiner, the attributions we make about our own and others' successes and failures produce specific kinds of emotional response, but these attributions are more complex than described by Heider, Jones and Davis or Kelley.

For Weiner, there are three dimensions of causality. These are:

1. the *locus dimension:* causes can be internal/external (person/situation)
2. the *stability dimension:* causes can be stable/transient (permanent/temporary)
3. the *controllability dimension:* causes can be controllable or uncontrollable.

For example, we may blame failure in an exam on a really difficult paper (external, stable, uncontrollable), which is likely to make us feel angry. Or we may blame the really bad headache we awoke with on the morning of the exam (internal, unstable, uncontrollable), which may make us feel both angry and disappointed. But a third possibility is that we blame our failure on our basic lack of ability

(internal, stable, uncontrollable), which is likely to make us feel quite depressed (see Figure 10.7, page 166).

What's important here is that not all internal or external causes are of the same kind. For Weiner, causes are *multidimensional*.

ERROR AND BIAS IN THE ATTRIBUTION PROCESS

As we've already seen, people are far less logical and systematic (less 'scientific') than required by Kelley's covariation model. We also noted that both this and Jones and Davis's CIT are *normative* models: they describe people's *ideal* attribution processes. 'Normative' here means a model of people thinking according to the highest standards, an idealised view of how people would think if provided with all the available information, with unlimited time and displaying no bias (Fiske, 2004).

Research into sources of error and bias seems to provide a much more accurate account of how people *actually* make causal attributions. Zebrowitz (1990) defines sources of bias as:

> ... the tendency to favour one cause over another when explaining some effect. Such favouritism may result in causal attributions that deviate from predictions derived from rational attributional principles, like covariation ...

Even though almost all behaviour is the product of both the person and the situation, our causal explanations tend to emphasise one or the other. According to Jones & Nisbett (1971), we all want to see ourselves as competent interpreters of human behaviour, and so we naïvely assume that simple explanations are better than complex ones. To try to analyse the interactions between personal and situational factors would take time and energy, and we seldom have all the relevant information at our disposal.

One kind of bias is the uneven use of different kinds of causal information that relate to Kelley's covariation model. Although all three types have some influence on attributions (thus supporting the broad outline of Kelley's model), we've noted that they're not used to an equal extent. People use consistency the most, distinctiveness moderately and consensus the least (Kruglanski, 1977).

The fundamental attribution error (FAE)

The *fundamental attribution error* (FAE) refers to the general tendency to overestimate the importance of personal/dispositional factors relative to situational/environmental factors as causes of behaviour (Ross, 1977).

This will tend to make others' behaviour seem more predictable which, in turn, enhances our sense of control over the environment.

> ***ASK YOURSELF...***
> - Can you relate the FAE to any of the Gestalt laws of perception (see Chapter 15)?

Heider (1958) believed that behaviour represents the 'figure' against the 'ground', comprising context, roles, situational pressures, and so on. In other words, behaviour is conspicuous, and situational factors are less easily perceived.

For Zebrowitz (1990):

> ... the fundamental attribution error is best viewed as a bias towards attributing an actor's behaviour to dispositional causes rather than as an attribution error. This bias may be limited to adults in Western societies and it may be most pronounced when they are constrained to attribute behaviour to a single cause ...

(See Critical Discussion 23.1, page 403.)

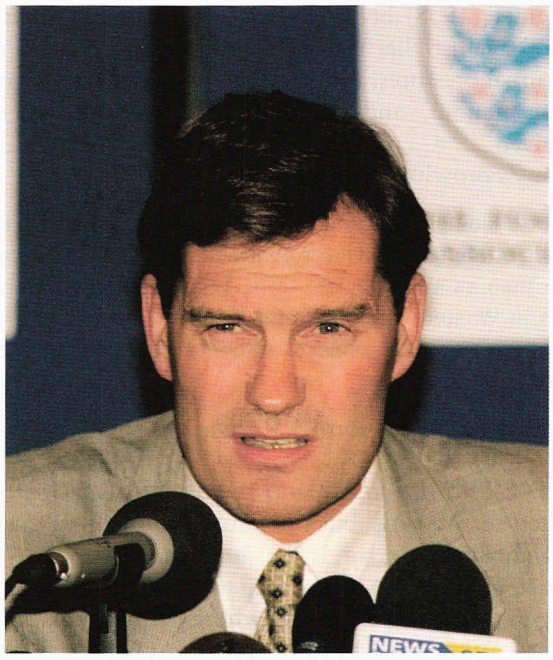
The FAE and the just world hypothesis (JWH)

Related to the FAE, but not usually cited as an example of an attribution error, is the *just world hypothesis* (JWH) (Lerner, 1965, 1980). According to this, 'I am a just person living in a just world, a world where people get what they deserve'. When 'bad' things happen to people, we believe it's because they're in some way 'bad' people, so that they have at least partly 'brought it on themselves'. This can help explain the phenomenon of 'blaming the victim'. In rape cases, for example, the woman is often accused of having 'led the man on' or giving him the sexual 'green light' before changing her mind.

Myers (1994) gives the example of a German civilian who, on being shown round the Bergen–Belsen concentration camp after the British liberation, commented 'What terrible criminals these prisoners must have been to receive such treatment'. What this person seems to have been saying is that s/he found it totally unbelievable that such horrors (as had obviously been perpetrated in that camp) could have happened to innocent people – if they happened to them, why couldn't they happen to me? Believing in a just world gives us a sense of being in control: so long as we're 'good', only 'good' things will happen to us.



Jodie Foster, in *The Accused*, victim of gang-rape. Defence lawyers accused her of being of 'questionable character'



Glenn Hoddle was sacked as England football manager in 1999 after allegedly claiming that disabled people were being punished for sins committed in a former life

The actor–observer effect (AOE)

Related to the FAE is the tendency for actors and observers to make different attributions about the same event. This is called the *actor–observer effect* (AOE) (Jones & Nisbett, 1971; Nisbett *et al.*, 1973).

- Actors usually see their own behaviour as primarily a response to the situation, and therefore as quite *variable* from situation to situation (the cause is *external*).
- The observer typically attributes the same behaviour to the actor's intentions and dispositions, and therefore as quite *consistent* across situations (the cause is *internal*). The observer's attribution to internal causes is, of course, the FAE.

Nisbett *et al.* (1973) found that students: (a) assumed that actors would behave in the future in ways similar to those they'd just witnessed; (b) described their best friend's choices of girlfriend and college major in terms referring to dispositional qualities of their best friend (while more often describing their own similar choices in terms of properties of the girlfriend or major); and (c) attributed more personality traits to other people than to themselves.

One explanation for the AOE is that what's *perceptually salient* or vivid for the actor is different from what's perceptually salient or vivid for the observer (this is the figure–ground explanation which we noted when discussing the FAE). An important study by Storms (1973) supports this perceptual salience explanation of the AOE.

KEY STUDY 23.4 Videotape and the attribution process (Storms, 1973)

- Two actor participants at a time engaged in a brief, unstructured conversation, while two observers looked on.
- Later, a questionnaire was used to measure the actors' attributions of their own behaviour in the conversation, and the observers' attributions of the behaviour of one of the two actors to whom they'd been assigned.
- Visual orientation was manipulated by the use of videotapes of the conversation so that:
  - a the *no video* (control) group simply completed the questionnaire
  - b the *same orientation* group simply saw a video of what they saw during the original conversation (before completing the questionnaire)
  - c the *new orientation* group saw a video which reversed the original orientation: actors saw themselves and observers saw the other actor (again, before completing the questionnaire).
- As predicted, in the first two groups the usual AOE was found. But, also as predicted, the AOE was reversed in the third group: actors made more dispositional attributions than did observers.

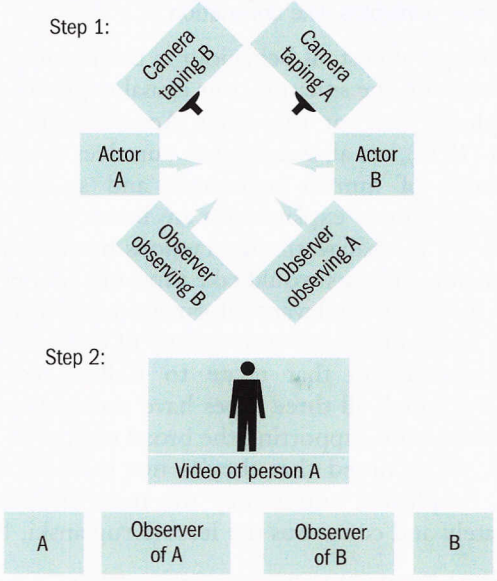


Figure 23.1 Diagram depicting the arrangement in the Storms (1973) experiment

The self-serving bias (SSB)

Several studies have found that the AOE is most pronounced when judging *negative* behaviours, and may be absent or even reversed for positive ones.

ASK YOURSELF...

- Try to account for this finding.

Naturally, no one wants to admit to being incompetent, so we're more likely to 'blame' our failures on something external to ourselves. This is the *self-protecting bias,* which protects our self-esteem. However, we're quite happy to take the credit for our successes. This is the *self-enhancing bias,* which enhances our self-esteem. Together, they constitute the *self-serving bias* (SSB) (Miller & Ross, 1975).

There's some evidence that positively valued outcomes (e.g. altruism) are more often attributed to people, and negatively valued outcomes (e.g. being late) to situational factors, regardless of who committed them. However, when either the self or someone closely associated with the self has committed the action, credit for positive events and denial of responsibility for negative ones are even stronger.

CRITICAL DISCUSSION 23.1 Cultural differences in attributional errors and biases

- Although the FAE has been assumed to be universal, more recent research suggests it may actually be specific to *individualist* (predominantly western) cultures (Fiske *et al.*, 1998: see Chapter 47).
- In *collectivist* (mainly non-western) cultures, people are more likely to attribute someone's behaviour to situational factors as opposed to personality characteristics. They don't expect people to be consistent on their behaviour: different behaviours may be required when the situation calls for it (Nagayama Hall & Barongan, 2002).
- English-language newspapers reporting murders emphasise dispositional causes (such as a deeply disturbed, driven personality, very bad temper/'short fuse'), while Chinese-language papers reporting the same crime emphasise situational causes (relationships, rivalry and isolation, the social availability of guns, achievement pressure, and the immediate context, such as having recently been sacked) (Morris & Peng, 1994).
- While all cultures encourage a search for invariant dispositions, some locate them more in individual actors, others in collective actors (Morris *et al.*, 2001).
- The SSB isn't found among Asians, who are more likely to attribute their successes to external factors (such as luck) and their failures to internal factors (such as lack of effort) (Kitayama & Markus, 1995). This, in turn, reflects a bias towards *self-effacement*, which is more likely to maintain one's self-esteem in a collectivist culture (where the achievements of the individual are minimised).
- This strategy for maintaining self-esteem is also often used by women in individualist cultures:

  ... whose belief system can also be characterized as collectivist in nature, in that they value relationships, put other people's needs before their own, and define themselves in terms of their connectedness to others ... (Nagayama Hall & Barongan, 2002)

The importance of the consequences

The more serious the consequences of an actor's behaviour, the more likely the FAE is to be made: the more serious the outcome, the more likely we are to judge the actor as responsible, regardless of his/her perceived intentions.

KEY STUDY 23.5: Consequences of behaviour and the FAE (Walster, 1966)

- Walster gave participants an account of a car accident, in which a young man's car had been left at the top of a hill and then rolled down backwards.
- One group was told that very little damage was done to the car, and no other vehicle was involved.
- A second group was told that it collided with another car, causing some damage.
- A third group was told that the car crashed into a shop, injuring the shopkeeper and a small child.
- When participants had to assess how responsible the car owner was, the third group found him more 'guilty' or morally culpable than the second group, and the second group found him more guilty than the first.

If more serious consequences can result in greater blame and responsibility, can the reverse inference occur; that is, can belief that an act is intentional affect perception of the seriousness of the consequences? Darley & Huff (1990) found that judgements of the damage caused by an action depended on whether participants believed it was done intentionally, through negligence or accidentally. Although the damage done was described in an identical way, those who read that the act was done intentionally inflated their estimation of the amount of damage done, compared with those who believed the damage was caused unintentionally (either through negligence or accident).

Another facet of the consequences of behaviour is how they affect us personally (*personal* or *hedonic relevance*): the more they affect us (the greater the hedonic relevance), the more likely we are to hold the actor responsible. Going one step further, *personalism* is the perceiver's belief that the actor intended to harm the perceiver. In terms of Jones and Davis's theory, this increases the chances of making a *correspondent inference.*

Self-centred bias

This refers to the tendency for each person to think that s/he has contributed more to a joint project than the other thinks s/he has. This has been found in several settings, including married couples and household chores, students and ideas generated in a team's psychological assessment, and in basketball players and important turning points in a game (Ross & Sicoly, 1979).

In all these settings, the bias seems to depend on people's ability to *remember* their own contribution more than that of others, rather than a motivation to distort the extent of their contribution (Fiske, 2004).

CONCLUSIONS

All these errors and biases fall under the heading of *descriptive models*. They emphasise what people actually do when observed directly. What people 'ought' to do (according to normative models) if they're being completely rational, is often *not* what they actually do. According to Fiske (2004):

> ... The descriptive models, by documenting biases, capture that discrepancy. In the case of ordinary personology, people ignore the hidden power of situations and focus on other people's dispositions more than they should, and people attribute more personal responsibility to themselves for good events than they should.

CHAPTER SUMMARY

- **Attribution theory** refers to psychologists' attempts to explain the **attribution process**. **Theories of attribution** draw on the principles of attribution theory to predict how people will respond in particular life domains.
- Heider's 'common-sense' psychology sees people as **naïve scientists**, inferring unobservable causes (or meaning) from observable behaviour. In western culture, behaviour is explained in terms of both **personal** (**dispositional/internal**) and **situational** (**environmental/external**) factors.
- Jones and Davis were concerned with explaining why we make **correspondent inferences** about people's dispositions. One way of looking for dispositions that could have caused behaviour is through the **analysis of uncommon effects**.
- The likelihood of making dispositional attributions is influenced by **free choice**, **social desirability**, **roles** and **prior expectations**.
- Kelley's **covariation model** is concerned with the processes by which we make internal and external attributions for the causes of behaviour. The **principle of covariation** says that we're more likely to infer that two events are causally related if they repeatedly co-occur.
- Attributions about some effect/behaviour depend on the extent of its covariation with causal information regarding **consensus**, **consistency** and **distinctiveness.**
- Kelley's **configuration model** tries to account for 'single event attributions' in terms of **multiple necessary** and multiple **sufficient causal schemata.** The latter are associated with the **augmenting principle**, and we choose between two or more possible causes by using the **discounting principle**.
- Weiner's attribution theory identifies three dimensions of causality: **locus**, **stability** and **controllability**. It applies basic attributional principles to emotion and motivation.
- People are actually less rational and scientific than Jones and Davis's, and Kelley's **normative** models require. A more accurate account of the attribution process involves looking at **systematic biases** in the attribution of cause.
- The **fundamental attribution error** (FAE) is the tendency to exaggerate the importance of internal/dispositional factors relative to external/situational factors. The likelihood of making the error depends on the seriousness/importance of the **consequences** of behaviour, and **personal/hedonic relevance**.
- In the **actor–observer effect** (AOE), **actors** see their behaviours as responses to **situational factors**, whereas **observers** explain the same behaviours in **dispositional** terms.
- The AOE is most pronounced when one explains one's own negative behaviour (**self-protecting bias**). Personal successes tend to be explained in dispositional ways (**self-enhancing bias**). Together, they comprise **the self-serving bias** (SSB).
- There are important **cultural differences** with regard to the FAE and SSB in particular. These are related to **individualist** and **collectivist** cultures.
- Other biases include the **self-centred bias**.

Links with other topics/chapters

- Two of the traditions that form the backbone of attribution theory are Schachter's *cognitive labelling theory of emotion* (Chapter 10) and Bem's *self-perception theory of attitude change* (Chapter 24).
- The multidimensional nature of causes, combined with the emotional responses associated with different attributions (Weiner) have important implications for *impression management/self-presentation* (Chapter 22), *self-esteem* (especially in relation to *gender differences* in *achievement motivation*) (Chapters 9 and 36), and *helping behaviour* (Chapter 30).
- The claim that women's collectivist belief system is a means of maintaining their self-esteem is directly relevant to Gilligan's account of *female morality* (Chapter 35).
- In combination with the FAE, the JWH can help to explain certain aspects of *prejudice* (see Chapter 25) and *helping behaviour* (see Chapter 30).
- An interesting exception to the SSB is the case of *clinically depressed* people (Abramson *et al.*, 1978) (Chapter 44).
- There's also evidence that women are more likely than men to cope with stress by blaming themselves for their plight (Chapter 12).
- The SSB might be useful in the short run, but not adaptive in the long term. For example, blaming one's partners is correlated with *marital dissatisfaction*, and the data suggest that blame actually causes the unhappiness (not vice-versa) (Chapter 28).

What are attitudes?

Attitudes, beliefs and values

What are attitudes for?

The measurement of attitudes

Thurstone's equal appearing intervals scale (1928)

Likert scale (1932)

Sociometry (Moreno, 1953)

Guttman scalogram method

Semantic differential (Osgood *et al.*, 1957)

Some alternative methods of measuring attitudes

The relationship between attitudes and behaviour

Influences on behaviour

Compatibility between attitudes and behaviour

The reliability and consistency of behaviour

The strength of attitudes

Social influence and behaviour change

Persuasive communication

Theories of persuasion

Theories of systematic processing

Attitude function and persuasion

Fear and persuasion

Propaganda and war

The aims of propaganda

Propaganda versus education

Advertising

Subliminal advertising

Theories of attitude change

Cognitive dissonance theory (CDT)

Dissonance following a decision

Dissonance resulting from effort

Engaging in counter-attitudinal behaviour

Self-perception theory (SPT)

Chapter summary

Links with other topics/chapters

24

ATTITUDES AND ATTITUDE CHANGE



INTRODUCTION AND OVERVIEW

According to Gordon Allport (1935):

The concept of attitudes is probably the most distinctive and indispensable concept in contemporary American social psychology ...

More than 50 years later, Hogg & Vaughan (1995) claim that:

Attitudes continue to fascinate research workers and remain a key, if controversial, part of social psychology.

However, the study of attitudes has undergone many important changes during that time, with different questions becoming the focus of theory and research.

According to Stainton Rogers *et al.* (1995), psychologists have tried to answer four fundamental questions over the last 70 years:

1. Where do attitudes come from? How are they moulded and formed in the first place?
2. How can attitudes be measured?
3. How and why do attitudes change? What forces are involved and what intrapsychic mechanisms operate when people shift in their opinions about particular 'attitude objects'?
4. How do attitudes relate to behaviour? What is it that links the way people think and feel about an attitude object, and what they do about it?

In this chapter, the emphasis is on some of the answers that have been offered to questions 3 and 4. This discussion is also relevant to prejudice, considered as an extreme attitude (see Chapter 25).

During the 1940s and 1950s, the focus of research was on attitude change, in particular *persuasive communication*. Much of the impetus for this came from the use of *propaganda* during the Second World War, as well as a more general concern over the growing influence of the mass media, especially in the USA. The power of advertising was also beginning to interest psychologists and other social scientists. This period also saw the birth of a number of theories of attitude change, the most influential of these being Festinger's *cognitive dissonance theory*.

The 1960s and 1970s was a period of decline and pessimism in attitude research, at least partly due to the apparent failure to find any reliable relationship between measured attitudes and behaviour (Hogg & Vaughan, 1995). However, the 1980s saw a revival of interest, stimulated largely by the cognitive approach, so attitudes represent another important aspect of *social cognition* (see Chapter 22).

WHAT ARE ATTITUDES?

Allport (1935) regarded the study of attitudes as the meeting ground for the study of social groups, culture and the individual. Similarly, Festinger (1950) emphasised the integral interdependence of individual and group: 'an attitude is correct, valid, and proper to the extent that it is anchored in a group of people with similar beliefs, opinions, and attitudes'. But, with a few notable exceptions, attitude research has focused on *internal* processes, ignoring the influence of groups on attitude formation and change (Cooper *et al.*, 2004). Even Allport's definition in Table 24.1 reflects this bias. Warren and Jahoda's definition is probably the most 'social'.

According to Rosenberg & Hovland (1960), attitudes are 'predispositions to respond to some class of stimuli with certain classes of response'. These classes of response are:

- *affective:* what a person feels about the attitude object, how favourably or unfavourably it's evaluated
- *cognitive:* what a person believes the attitude object is like, objectively

Table 24.1 Some definitions of attitudes

'An attitude is a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related.' (Allport, 1935)
'A learned orientation, or disposition, toward an object or situation, which provides a tendency to respond favourably or unfavourably to the object or situation ...' (Rokeach, 1968)
'... attitudes have social reference in their origins and development and in their objects, while at the same time they have psychological reference in that they inhere in the individual and are intimately enmeshed in his behaviour and his psychological make-up.' (Warren & Jahoda, 1973)
'The term *attitude* should be used to refer to a general, enduring positive or negative feeling about some person, object, or issue.' (Petty & Cacioppo, 1981)
'An *attitude* is an *evaluative disposition toward some object*. It's an evaluation of something or someone along a continuum of like-to-dislike or favourable-to-unfavourable ....' (Zimbardo & Leippe, 1991)

- *behavioural* (sometimes called the '*conative*'): how a person actually responds, or intends to respond, to the attitude object.

This *three-component model,* which is much more a model of attitude structure than a simple definition (Stahlberg & Frey, 1988), is shown in Figure 24.1 (page 407). It sees an attitude as an intervening/mediating variable between observable stimuli and responses, illustrating the influence that behaviourism was still having, even in social psychology, at the start of the 1960s. A major problem with this multi-component model is the assumption that the three components are highly correlated (see below, pages 409–411).

Attitudes, beliefs and values

An attitude can be thought of as a blend or integration of beliefs and values. Beliefs represent the knowledge or information we have about the world (although these may be inaccurate or incomplete) and, in themselves, are *non-evaluative*. According to Fishbein & Ajzen (1975), 'a belief links an object to some attribute' (e.g. 'America' and 'capitalist state'). To convert a belief into an attitude, a 'value' ingredient is needed. Values refer to an individual's sense of what is desirable, good, valuable, worthwhile, and so on. While most adults will have many thousands of beliefs, they have only hundreds of attitudes and a few dozen values.

ASK YOURSELF...

- Try to identify some of your most cherished values (there should be a relatively small number of these). Then try to identify some related attitudes, which are less abstract than values.

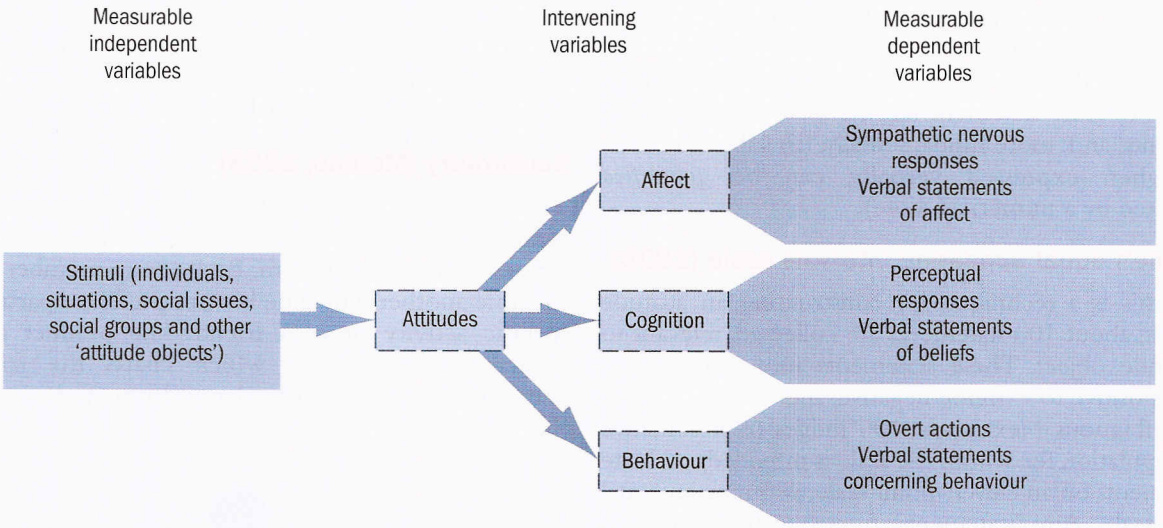


Figure 24.1 Three-component view of attitudes (Rosenberg & Hovland, 1960). From Stahlberg, D. & Frey, D. (1988) 'Attitudes 1: Structure, measurement and functions'. In Hewstone, M. *et al.* (Eds) *Introduction to Social Psychology*. Oxford, Blackwell.

WHAT ARE ATTITUDES FOR?

According to Hogg & Vaughan (1995):

> ... attitudes are basic and pervasive in human life ... Without the concept of attitude, we would have difficulty construing and reacting to events, trying to make decisions, and making sense of our relationships with people in everyday life ...

In other words, attitudes provide us with ready-made reactions to, and interpretations of events, just as other aspects of our cognitive 'equipment' do, such as schemas (see Chapter 21) and stereotypes (see Chapters 22 and 25). Attitudes save us energy, since we don't have to work out how we feel about objects or events each time we come into contact with them.

However, not all attitudes serve the same function. Katz (1960), influenced by Freud's psychoanalytic theory, believes that attitudes serve both conscious and unconscious motives. He identified four major functions of attitudes (see Table 24.2).

Katz's functional approach implies that some attitudes will be more resistant to efforts to change them than others, in particular those that serve an ego-defensive function. This is especially important when trying to account for prejudice and attempts to reduce it (see Chapter 25).

Table 24.2 Four major functions of attitudes (based on Katz, 1960)

Knowledge function	We seek a degree of predictability, consistency and stability in our perception of the world. Attitudes give meaning and direction to experience, providing frames of reference for judging events, objects and people.
Adjustive (instrumental or utilitarian) function	We obtain favourable responses from others by displaying socially acceptable attitudes, so they become associated with important rewards (such as others' acceptance and approval). These attitudes may be publicly expressed, but not necessarily believed, as is the case with compliance (see Chapter 26).
Value-expressive function	We achieve self-expression through cherished values. The reward may not be gaining social approval, but confirmation of the more positive aspects of our self-concept, especially our sense of personal integrity.
Ego-defensive function	Attitudes help protect us from admitting personal deficiencies. For example, prejudice helps us to sustain our self-concept by maintaining a sense of superiority over others. Ego defence often means avoiding and denying self-knowledge. This function comes closest to being unconscious in a Freudian sense (see Chapters 2 and 42).

THE MEASUREMENT OF ATTITUDES

An attitude cannot be measured directly, because it's a *hypothetical construct*. Consequently, it's necessary to find adequate attitude indicators, and most methods of attitude measurement are based on the assumption that they can be measured by people's beliefs or opinions about the attitude object (Stahlberg & Frey, 1988). Most attitude

scales rely on verbal reports, and usually take the form of standardised statements which clearly refer to the attitude being measured. Such scales make two further assumptions: (i) the same statement has the *same meaning* for all respondents; and, more fundamentally, (ii) subjective attitudes, when expressed verbally, can be *quantified* (represented by a numerical score).

Thurstone's equal appearing intervals scale (1928)

Strictly, this is a technique for constructing an attitude scale. First, about 100 statements are collected, relevant to the attitude object. These statements must range from extreme positive to extreme negative, and should be short and unambiguous. Next, about 100 'judges' (representative of the population for whom the scale is intended) evaluate the statements on an eleven-point scale, assuming an equal interval scale. Any statements (items) which produce substantial disagreements are discarded, until 22 remain (two for each of the eleven points on the scale: eleven favourable, eleven unfavourable). The average numerical scale position of each statement is calculated.

Finally, the 22 statements are given, in random order, to participants who are asked to indicate every statement with which they agree. The final attitude score is the mean scale value for these statements. Though revolutionary in its time, the Thurstone scale is rarely used today, partly because it's so time-consuming, and partly because of the assumption that it's an interval (as opposed to an ordinal) scale.

ASK YOURSELF...
- What's the difference between an ordinal and interval scale?
- Why do you think this is a problem in relation to attitude measurement?

Likert scale (1932)

This comprises a number of statements, for each of which participants indicate whether they strongly agree/agree/undecided/disagree/strongly disagree. If possible, statements are selected so that for half 'agree' represents a positive attitude and for the other half a negative attitude. This controls for *acquiescence response set*, the tendency to agree or disagree with items consistently, or to tick the 'undecided' point on the scale.

LIKERT SCALE

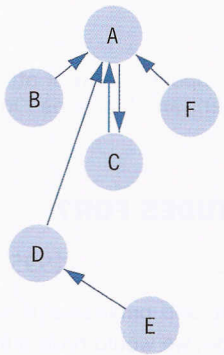
'I believe that under no circumstances can animal experiments be justified'

5	4	3	2	1
Strongly agree	Agree	Undecided	Disagree	Strongly disagree

It's one of the most popular standard attitude scales, partly because it's more statistically reliable than the Thurstone scale, and partly because it's easier to construct. It makes no assumptions about equal intervals.

Sociometry (Moreno, 1953)

This represents a method for assessing interpersonal attitudes in 'natural' groups (at school, college, work); that is, it assesses who likes whom. Each group member is asked to name another who'd be his/her preferred partner for a specific activity or as a friend. The product of these choices is a *sociogram*, which charts the friendship patterns, revealing the popular and unpopular members, the 'isolates', and so on.



Each circle represents a group member, and the arrows indicate direction of preference.

ASK YOURSELF...
- Who's the most popular member of the group?
- Who's most isolated?

Guttman scalogram method

This is based on the assumption that a single, unidimensional trait can be measured by a set of statements that are ordered along a continuum of difficulty of acceptance. The statements range from those that are easy for most people to accept, to those that most people couldn't endorse. Such scale items are also *cumulative*, since accepting one item implies acceptance of all those 'below' it. It's constructed so that responses follow a step-like order (Hogg & Vaughan, 1995). See figure on page 409.

Semantic differential (Osgood *et al.*, 1957)

This assumes a hypothetical semantic space, in which the meaning or connotation of any word or concept can be represented somewhere on a seven-point scale. Unlike other scales, this allows different attitudes to be measured on the same scale. The attitude object is denoted by a single word (e.g. 'father'), and the scale comprises seven *bipolar* scales of adjectives (a value of seven usually being given to the positive end).

GUTTMAN SCALE
Attitude towards mixed-ethnic housing

How acceptable	Statement
Least	*Generally speaking, people should be able to live where they want.*
	Real estate agencies should not discriminate against minority groups.
	The local council should actively support the idea of open housing.
	There should be a local review board that would pass on cases of extreme discrimination of housing.
Most	*There should be laws to enforce mixed-ethnic housing.*

good_ _ _ _ _ _ _ _bad (illustrates the *evaluative factor*)
strong_ _ _ _ _ _ _ weak (illustrates the *potency factor*)
active _ _ _ _ _ _ _ passive (illustrates the *activity factor*)

Some alternative methods of measuring attitudes

- A problem with attitude scales (*self-report methods*) is that participants may be reluctant to reveal their true feelings. This can produce the effects of *social desirability*, in which participants give answers they think are expected or 'proper'. Incorporating a *lie scale* can help detect this tendency (see Chapter 42). Reassurance that their answers will remain anonymous, and stressing the importance of giving honest answers, can also help reduce the social desirability effect.
- A very different kind of solution is to use cleverly planned inconspicuous observation, such as Milgram's (1965) *lost letter technique*. This was designed to measure people's political attitudes, and involves the distribution, throughout a city, of large numbers of letters, stamped but unposted and addressed to different political organisations (such as 'Friends of the Nazi Party' and 'Friends of the Communist Party'). Depending on the rate at which the letters were returned, Milgram could assess the popularity of each organisation and the corresponding ideological bias of particular parts of the city. Milgram (1992) stresses that the technique guarantees the anonymity of those who took part.

ASK YOURSELF...
- Despite Milgram's assurance regarding anonymity, can you think of any ethical objections to the lost letter technique?

- In the *bogus pipeline technique* (Jones & Sigall, 1971), participants are convinced they cannot hide their true attitudes. They're connected to a machine that resembles a lie detector and told that it can measure both the strength and direction of emotional responses, implying that there's no point in lying. Several studies have shown that participants are indeed convinced, and are less likely to conceal socially undesirable attitudes (such as racial prejudice: Hogg & Vaughan, 1995).

ASK YOURSELF...
- Again, what's ethically dubious about the bogus pipeline technique?

THE RELATIONSHIP BETWEEN ATTITUDES AND BEHAVIOUR

Once we've established people's attitudes, can we then accurately predict how they'll behave? Rosenberg & Hovland's (1960) three-components model (see page 406) implies that the behavioural component will be highly correlated with the cognitive and affective components.

ASK YOURSELF...
- Do people's expressed attitudes (cognitive and affective components) necessarily coincide with their overt actions (behavioural component)?
- Do we always act in accordance with our attitudes?

An early study that shows the inconsistency of attitudes and behaviour is that of LaPiere (1934).

KEY STUDY 24.1 Some of my best friends are Chinese ... (LaPiere, 1934)
- Beginning in 1930 and for the next two years, LaPiere travelled around the USA with a Chinese couple (a young student and his wife), expecting to encounter anti-Oriental attitudes which would make it difficult for them to find accommodation.
- But in the course of 10,000 miles of travel, they were discriminated against only once and there appeared to be no prejudice. They were given accommodation in 66 hotels, auto-camps and 'Tourist Homes' and refused at only one. They were also served in 184 restaurants and cafés and treated with '... more than ordinary consideration ...' in 72 of them.
- However, when each of the 251 establishments visited was sent a letter six months later asking: 'Will you accept members of the Chinese race as guests in your establishment?', 91 per cent of the 128 which responded gave an emphatic 'No'. One establishment gave an unqualified 'Yes' and the rest said 'Undecided: depends upon circumstances'.

ASK YOURSELF...

- Try to account for LaPiere's findings.

Influences on behaviour

It's generally agreed that attitudes form only one determinant of behaviour. They represent *predispositions* to behave in particular ways, but how we actually act in a particular situation will depend on the immediate consequences of our behaviour, how we think others will evaluate our actions, and habitual ways of behaving in those kinds of situations. In addition, there may be specific *situational factors* influencing behaviour. For example, in the LaPiere study, the high quality of his Chinese friends' clothes and luggage and their politeness, together with the presence of LaPiere himself, may have made it more difficult to show overt prejudice. Thus, sometimes we experience a conflict of attitudes, and behaviour may represent a compromise between them.

Compatibility between attitudes and behaviour

The same attitude may be expressed in a variety of ways. For example, having a positive attitude towards the Labour Party doesn't necessarily mean that you actually become a member, or that you attend public meetings. But if you don't vote Labour in a general or local election, people may question your attitude. In other words, an attitude should predict behaviour to some extent, even if this is extremely limited and specific.

Indeed, Ajzen & Fishbein (1977) argue that attitudes can predict behaviour, provided that both are assessed at the same level of generality: there needs to be a high degree of *compatibility* (or *correspondence*) between them. They argue that much of the earlier research (LaPiere's study included) suffered from either trying to predict specific behaviours from general attitudes, or vice versa, and this accounts for the generally low correlations. A study by Davidson & Jaccard (1979) tried to overcome this limitation.

KEY STUDY 24.2 Attitudes can predict behaviour if you ask the right questions (Davidson & Jaccard, 1979)

- Davidson and Jaccard analysed correlations between married women's attitudes towards birth control and their actual use of oral contraceptives during the two years following the study.
- When 'attitude towards birth control' was used as the attitude measure, the correlation was 0.08. Clearly, the correspondence here was very low.
- But when 'attitudes towards oral contraceptives' were measured, the correlation rose to 0.32, and when 'attitudes towards using oral contraceptives' were measured, the correlation rose still further to 0.53.
- Finally, when 'attitudes towards using oral contraceptives during the next two years' was used, it rose still further, to 0.57. Clearly, in the last three cases, *correspondence* was much higher.

According to Ajzen and Fishbein, every single instance of behaviour involves four specific elements:

1. a specific action
2. performed with respect to a given target
3. in a given context
4. at a given point in time.

According to the *principle of compatibility,* measures of attitude and behaviour are compatible to the extent that the target, action, context and time element are assessed at identical levels of generality or specificity (Ajzen, 1988).

For example, a person's attitude towards a 'healthy lifestyle' specifies only the target, leaving the other three unspecified. A behavioural measure that would be compatible with this global attitude would have to aggregate a wide range of health behaviour across different contexts and times (Stroebe, 2000). Elaborating the psychological processes underlying the principle of compatibility, Ajzen (1996) suggested that to:

> ... the extent that the beliefs salient at the time of attitude assessment are also salient when plans are formulated or executed, strong attitude–behaviour correlations are expected.

The reliability and consistency of behaviour

Many of the classic studies which failed to find an attitude–behaviour relationship assessed just single instances of behaviour (Stroebe, 2000). As we noted earlier when discussing the LaPiere study, behaviour depends on many factors in addition to the attitude. This makes a single instance of behaviour an unreliable indicator of an attitude (Jonas *et al.*, 1995). Only by sampling many instances of the behaviour will the influence of specific factors 'cancel out'. This *aggregation principle* (Fishbein & Ajzen, 1974) has been demonstrated in a number of studies.

According to Hogg & Vaughan (1995), what emerged in the 1980s and 1990s is a view that attitudes and overt behaviour aren't related in a simple one-to-one fashion. In order to predict someone's behaviour, it must be possible to account for the interaction between attitudes, beliefs and behavioural intentions, as well as how all of these connect with the later action. One attempt to formalise these links is the *theory of reasoned action* (TRA) (Ajzen & Fishbein, 1970; Fishbein & Ajzen, 1975). This is discussed in relation to health behaviour in Chapter 12.



A demonstration of attitude–behaviour consistency that amazed the world; a pro-democracy Chinese student stands up for his convictions and defies tanks sent in against fellow rebels in Tiananmen Square, Beijing, China. Some 2000 demonstrators died in the subsequent massacre and the student was tried and shot a few days later

The strength of attitudes

Most modern theories agree that attitudes are represented in memory, and that an attitude's *accessibility* can exert a strong influence on behaviour (Fazio, 1986). By definition, strong attitudes exert more influence over behaviour, because they can be *automatically activated*. According to the MODE model ('motivation and opportunity as determinants': Fazio, 1986, 1990), spontaneous/automatic attitude–behaviour links occur when people hold highly accessible attitudes towards certain targets. These spontaneously guide behaviour, partly because they influence people's selective attention and perceptions of a particular target or situation.

One factor that seems to be important is *direct experience*. For example, Fazio & Zanna (1978) found that measures of students' attitudes towards psychology experiments were better predictors of their future participation if they'd already taken part in several experiments than if they'd only read about them.

MODE acknowledges that, in some situations, people engage in *deliberate, effortful* thinking about their attitudes when deciding how to act (forming behavioural intentions). For example, a student deciding which university to go to will probably scrutinise his/her attitudes before making a choice. But research conducted under MODE focuses on automatic processing (Cooper *et al.*, 2004). The *theory of planned behaviour* (TPB: Ajzen, 1991), which built on the TRA (see above), was designed to explain the relationship between attitudes and behaviour when deliberate, effortful processing is required. According to TPB, it's behavioural *intentions,* rather than attitudes, that directly influence behaviour (again, see Chapter 12).

CRITICAL DISCUSSION 24.1: So attitudes don't predict behaviour: what's the problem?

- The so-called *attitude–behaviour problem,* that is, the failure to find a reliable relationship between attitudes and behaviour, threatened to undermine the entire study of attitudes. As we saw in the *Introduction and overview,* attitude research was a cornerstone of social psychology in general, and social cognition in particular, for much of their history (Stainton Rogers *et al.*, 1995).
- But from the perspective of *discursive psychology* (DP) there's no reason to expect such a correlation: *inconsistency* between attitudes and behaviour is what we'd expect to find.
- Traditional, mainstream, attitude research is based on the fallacy of *individualism,* according to which attitudes 'belong' to individuals (see Chapter 3). This implies something fairly constant, and which is expressed and reflected in behaviour. From a discursive perspective, attitudes are versions of the world that are *constructed* by people in the course of their interactions with others.
- DP is concerned with *action,* as distinct from cognition. In saying or writing things, people are performing actions, whose nature can be revealed through a detailed study of the discourse (e.g. recordings of everyday conversations, newspaper articles, TV programmes). Social psychologists have underestimated the centrality of *conflict* in social life; an analysis of *rhetoric* highlights the point that people's versions of events, and their own mental life, are part of ongoing arguments, debates and dialogues (Billig, 1987, 1992, in Potter, 1996).
- Compared with traditional attitude research, DP tries to shift the focus away from single, isolated, individuals towards interactions between individuals and groups, a more *relational* or *distributed* focus (Potter, 1996).

SOCIAL INFLUENCE AND BEHAVIOUR CHANGE

Persuasive communication

According to Laswell (1948), in order to understand and predict the effectiveness of one person's attempt to change the attitude of another, we need to know 'Who says what in which channel to whom and with what effect'. Similarly, Hovland & Janis (1959) say that we need to study:

- *the source* of the persuasive communication, that is, the communicator (Laswell's 'who')
- *the message* itself (Laswell's 'what')
- *the recipient* of the message or the audience (Laswell's 'whom'), and
- the *situation* or *context*.

The basic paradigm in laboratory attitude-change research involves three steps or stages:

1. measure people's attitude towards the attitude object (*pre-test*)

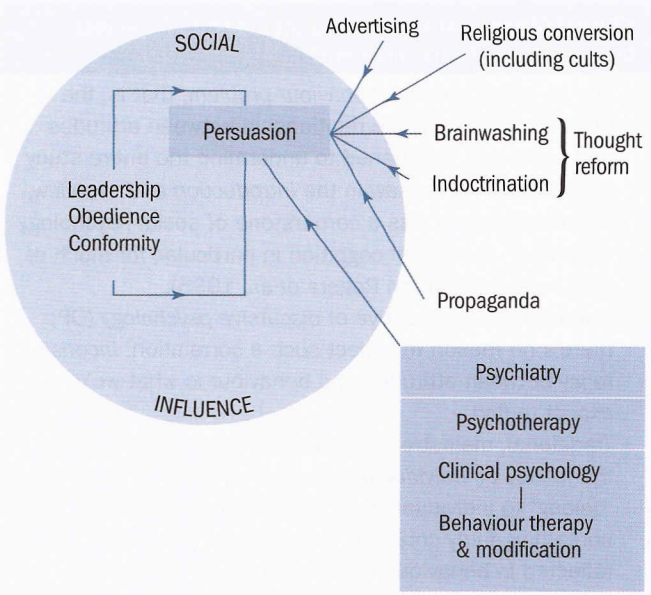


Figure 24.2 Different kinds of attempt to change people's attitudes and behaviour. These range from professional help for emotional and behavioural problems, through inevitable features of social interaction/social influence, to deliberate attempts to manipulate and control others for the benefit of the manipulator

2. expose them to a *persuasive communication* (manipulate a source, message or situational variable, or isolate a recipient-variable as the independent variable: see Figure 24.3)
3. measure their attitudes again (*post-test*).

If there's a difference between pre- and post-test measures, then the persuasive communication is judged to have 'worked'.

Theories of persuasion

The early research into persuasive communication was conducted for the US War Department's Information and Education Department. This largely pragmatic approach is known as the *Yale approach,* with Hovland being one of the leading figures involved. It told us a great deal regarding *when* attitude change is most likely to occur, and *how,* in practical terms, it can be produced. But it told us less about *why* people change their attitudes in response to persuasive messages.

Theories of systematic processing

According to *theories of systematic processing,* what's important is that the recipient processes the message content in a detailed way. This approach began with Hovland *et al.*'s (1953) proposal that the impact of persuasive messages can be understood in terms of a sequence of processes:

Attention to message ⟶ Comprehension of the content ⟶ Acceptance of its conclusions

If any of these fails to occur, persuasion is unlikely to be achieved.

McGuire (1969) proposed a longer chain of processes. We should ask if the recipient (i) attended to the message; (ii) comprehended it; (iii) yielded to it (accepted it); (iv) retained it; and (v) acted as a result. As with Hovland *et al.*'s theory, the failure of any one of these steps will cause the sequence to be broken.

Dual process/cognitive models

According to the *dual-process* or *cognitive perspective* (e.g. Chaiken, 1987), the key questions are as follows.

- What cognitive processes determine whether someone is actually persuaded?

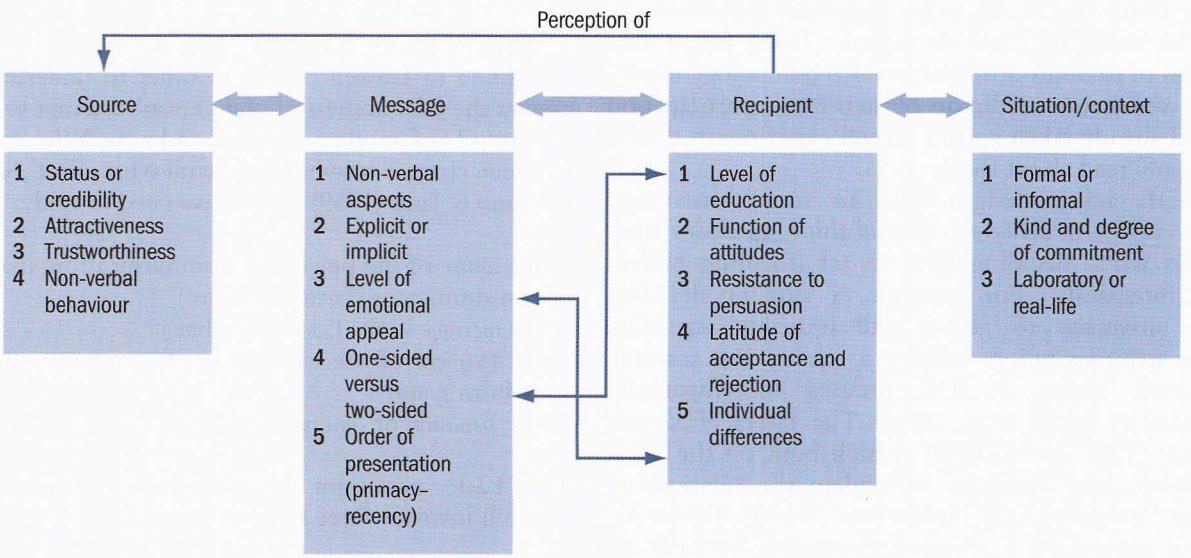
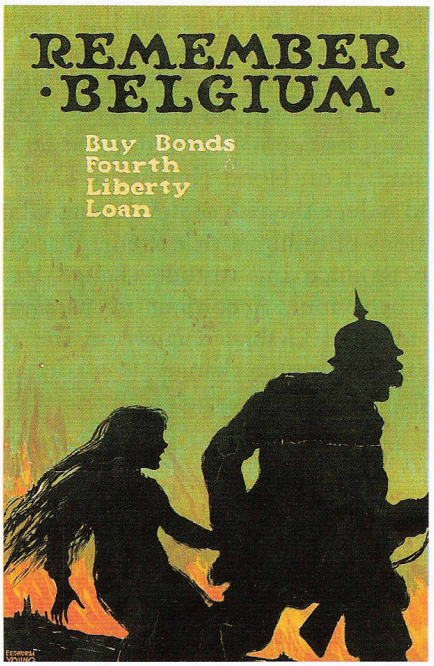


Figure 24.3 The four major factors involved in persuasive communication (arrows between boxes indicate examples of interaction between variables)



A First World War poster campaign, inducing people to invest in the war effort. Most people were sufficiently ego-involved that source credibility was irrelevant, nor was suspicion of the source's motives aroused since it was in everybody's best interest to invest in the war effort

- What do people think about when exposed to persuasive appeals?
- How do their various cognitive processes determine whether and to what extent they experience attitude changes (Baron & Byrne, 1991)?

Chaiken's (1987) answer to these questions is in the form of his *heuristic model of persuasion*. Heuristics are rules of thumb or mental shortcuts, which we use in processing social or any other kind of information (see Chapters 20 and 22). When a situation is personally involving (for example, it involves attitudes which are salient for the individual concerned), careful, cognitive analysis of the input occurs. The degree of attitude change depends largely on the quality of the arguments presented.

However, when personal involvement is low, individuals rely on various heuristics to determine whether to change their attitudes. Much of the Yale approach, in fact, deals with the content of these heuristics. For example, experts are more believable than non-experts, and so we're more easily persuaded by the former, as we are by likeable sources (compared with non-likeable). Other examples of heuristics include being more persuaded by a greater number of arguments backed up by statistics than a smaller number, and 'if other people think something is right (or wrong), then I should too'. These are essentially peripheral, non-content issues.

An evaluation of heuristic models

It's assumed that attitudes formed or changed on the basis of heuristic processing will be less stable, less resistant to counter-arguments, and less predictive of subsequent behaviour than those based on systematic processing. Several studies have shown that attitude change accompanied by high levels of issue-relevant cognitive activity is more persistent than that accompanied by little such activity (Stroebe, 2000).

Attitude function and persuasion

The functions of attitudes also represent an important feature of the cognitive analysis of persuasion (see Table 24.2). Shavitt (1990) argues that persuasive messages which emphasise the appropriate (primary) attitude function of a given product should be more successful in changing attitudes than those which focus on other attitude functions. For example, a commercial which emphasises the practical function of air conditioners should be more successful than one which emphasises their social identity function (they project a particular kind of social image). The reverse would be true for a commercial advertising perfume.

Fear and persuasion

A famous early attempt to induce attitude change through the manipulation of fear was made by Janis & Feshbach (1953).

KEY STUDY 24.3 Fear of the dentist as a means to healthier teeth (Janis & Feshbach, 1953)

- Janis and Feshbach randomly assigned American high-school students to one of four groups (one control and three experimental).
- The message was concerned with dental hygiene, and degree of fear arousal was manipulated by the number and nature of consequences of improper care of teeth (which were also shown in colour slides). Each message also contained factual information about the causes of tooth decay, and some advice about caring for teeth.
- The *high fear condition* involved 71 references to unpleasant effects (including toothache, painful treatment, and possible secondary diseases, such as blindness and cancer). The *moderate fear condition* involved 49 references, and the *low fear condition* just 18. The control group heard a talk about the eye.
- Before the experiment, participants' attitudes to dental health, and their dental habits, were assessed as part of a general health survey. The same questionnaire was given again immediately following the fear-inducing message, and one week later.
- The results show that the stronger the appeal to fear, the greater their anxiety (an index of attitude change). But as far as actual changes in dental *behaviour* were concerned, the high fear condition proved to be the least

effective. Eight per cent of the high fear group had adopted the recommendations (changes in teethbrushing and visiting the dentist in the weeks immediately following the experiment), compared with 22 per cent and 37 per cent in the moderate and low fear conditions respectively.

Similar results were reported by Janis & Terwillinger (1962), who presented a mild and strong fear message concerning the relationship between smoking and cancer.

These studies suggest that, in McGuire's terms, you can frighten people into attending to a message, comprehending it, yielding to it, and retaining it, but not necessarily into acting upon it. Indeed, fear may be so great that action is *inhibited* rather than facilitated. However, if the audience is told how to avoid undesirable consequences and believes that the preventative action is realistic and will be effective, then even high levels of fear in the message can produce changes in behaviour. The more specific and precise the instructions, the greater the behaviour change (the *high availability factor*).

ASK YOURSELF...

- Can you relate the high availability factor to one of the principles we identified when discussing the measurement of attitude–behaviour correlations?



Part of an anti-smoking commercial based on the appeal to fear

According to Stroebe (2000), mass media campaigns designed to change some specific health behaviour should use arguments aimed mainly at changing beliefs relating to that *specific* behaviour – rather than focusing on more general health concerns. This is another example of the compatibility principle. For example, to persuade people to lower their dietary cholesterol, it wouldn't be very effective merely to point out that coronary heart disease (CHD) is the major killer and/or that high levels of saturated fat are bad for one's heart. To influence diet, it would have to be argued that very specific dietary changes, such as less animal fats and red meat, would have a positive impact on blood cholesterol levels, which, in turn, should reduce the risk of developing CHD.

In situations of minimal or extreme fear, the message may fail to produce any attitude change, let alone any change in behaviour. According to McGuire (1968), there's an inverted U-shaped curve in the relationship between fear and attitude change.

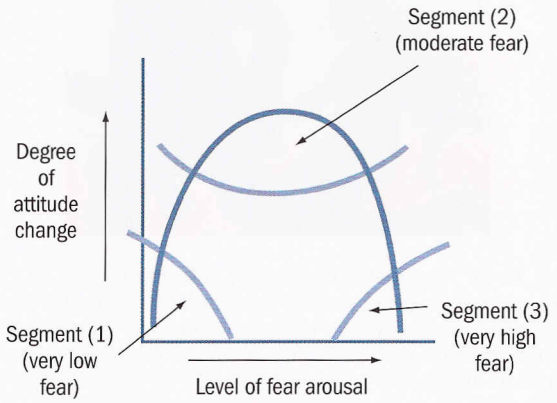


Figure 24.4 Inverted U curve showing relationship between attitude change and fear arousal (based on McGuire, 1968)

In segment 1 of the curve, the participant isn't particularly interested in (aroused by) the message: it's hardly attended to and may not even register. In segment 2, attention and arousal increase as fear increases, but the fear remains within manageable proportions. In segment 3, attention will decrease again, but this time because defences are being used to deal with extreme fear: the message may be denied ('it couldn't happen to me') or repressed (see Chapter 12). Despite evidence of defensive processing, Stroebe (2000) maintains that:

> ... the overwhelming majority of studies on fear appeals has found that higher levels of threat resulted in greater persuasion than did lower levels. However, the effectiveness of high-fear messages appeared to be somewhat reduced for respondents who feel highly vulnerable to the threat ...

The importance of feeling vulnerable

In order to arouse fear, it isn't enough that a health risk has serious consequences: the individual must also feel personally at risk (i.e. vulnerable). There's some evidence that unless individuals feel vulnerable to a threat, they're unlikely to form the intention to act on the recommendations in the message (Kuppens *et al.*, 1996). Fear appeals are also most likely to be effective for individuals who are unfamiliar with a given health risk. For example, when the dangers involved in unprotected anal intercourse

among homosexuals became known in the early 1980s, the information appeared to produce an enormous reduction in such practices. But there was a core of men who were unaffected by the information, illustrating that simply repeating the dangers of HIV infection doesn't achieve risk reduction with such individuals (Stroebe, 2000: see Chapter 12).

Feeling vulnerable relates to what McGuire calls the *initial level of concern*. Clearly, someone who has a high level of initial concern will be more easily pushed into segment 3 of the curve than someone with a low level. The former may be overwhelmed by a high-fear message (in which case defences are used against it), while the latter may not become interested and aroused enough for the message to have an impact.

Propaganda and war

'Propaganda' comes from the Latin '*propagare*', which refers to the gardener's practice of pinning the fresh shoots of a plant into the earth in order to reproduce new plants which will later take on a life of their own. So, one implication of the term (as originally used in the seventeenth century) is the spread of ideas through their deliberate cultivation or artificial generation.

But in the twentieth century, propaganda implies something more sinister, a deliberate attempt to manipulate, often by concealed or underhand means, the minds of other people for ulterior ends (Brown, 1963). This change can be dated from the official use of propaganda as a weapon in the total warfare of modern times, beginning with World War I. But this was itself an effect of changes in the nature of communication within technically advanced societies. Pratkanis & Aronson (1991) define propaganda as:

> ... mass suggestion or influence, through the manipulation of symbols and the psychology of the individual. Propaganda is the communication of a point of view with the ulterior goal of having the recipient of the appeal come to 'voluntarily' accept this position as if it were his or her own.

The aims of propaganda

Regardless of the media used (such as pamphlets, leaflets, newspapers, posters, films and public speeches), and the particular war, the chief aims of wartime propaganda, according to Brown (1963) are to:

- mobilise and direct hatred against the enemy and undermine the enemy's morale
- convince the home public of the rightness of the [Allied] cause and to increase and maintain fighting spirit
- develop the friendship of neutrals and strengthen in their minds the belief that not only are the Allies in the right but they will be victorious in the end, and, if possible, to enlist their active support and cooperation
- promote a picture of the enemy (as brutal, committing atrocities, wholly responsible for the war in the first place, and so on) that justifies the entry of a (usually) peaceable nation into war to 'clear the conscience of the whole nation' (Brown, 1963)
- develop and strengthen the friendship of the Allies
- build up strong ingroup attitudes and feelings and opposed feelings of hatred towards the enemy as a dangerous outgroup.



George W. Bush rallying US troops in Iraq, 2004

As Brown (1963) claims:

> There is nothing like a war for breaking down class and other barriers and creating feelings of friendship and co-operation within a country because all its previously inwardly directed aggression and resentment comes to be directed against an external enemy, and it is only in the last stages of a losing effort or after a war has been won that disunity begins to show itself once more ...

ASK YOURSELF...

- How does Brown's quote relate to Tajfel's *social identity theory* (SIT) as one explanation of prejudice and discrimination, and to Allport's advocacy of *equal status contact* and the *pursuit of common goals* as one means of reducing them? (See Chapter 25.)

Propaganda tries to limit our choices deliberately, either by (a) avoiding arguments (the bald statement of one point of view to the exclusion of others), or (b) by emotional, non-objective criticism of the other side and its opinions by use of caricature, stereotypes and other methods.

Box 24.1 Some specific techniques used in propaganda

The use of stereotypes: The Nazi portrayal of Jews (as shown below) is a good illustration of how a generalised belief about an entire group of people is exaggerated in the form of a caricatured portrayal of that group – the negative characteristics are taken to an extreme form (see Chapter 22).

The substitution of names: Favourable or unfavourable names, with an emotional connotation, are substituted for neutral ones, for example, 'Red' (replaces Communist or Russian), 'Union bosses' (for the presidents of trade unions), 'Huns'/'Krauts' (Germans) and 'Yids' (Jews). Conversely, 'free enterprise' sounds better than 'capitalism'.

Selection: From a mass of complex facts, selection is made for propaganda purposes. Censorship is one way of achieving this and thus is a form of propaganda.

Repetition: If a statement or slogan is repeated often enough, it will eventually come to be accepted by the audience, such as Hitler's 'Ein Volk, ein Reich, ein Fuhrer' ('One people, one empire, one leader'). During the First World War, there were demands for 'A War to End War' and to 'Make the World Safe for Democracy'.

Assertion: Instead of argument, bald assertions are used to support the propagandist's case, as in the presentation of only one side of the picture, the deliberate limitation of free thought and questioning.

Pinpointing the enemy: It's useful to present a message not only *for* something but also *against* some real or imagined enemy who's supposedly frustrating the audience's will. This is demonstrated by the Nazi campaign against the Jews (the scapegoats for Germany's humiliation and economic hardships following World War I, which pervaded every aspect of life in Germany in the 1930s (see Chapter 25). An example of this is the beer-mat with the inscription 'Whoever buys from a Jew is a traitor to his people'. (The caricatured face also illustrates the use of stereotypes – see above.)



(Based on Brown, 1963)

Propaganda versus education

Although public health campaigns (such as those for safe sex and healthier eating: see above) fit Pratkanis and Aronson's definition of propaganda, these aren't usually what we have in mind when we use the term: such campaigns are aimed at *benefiting* the audience. Similarly, while education tries to encourage independence of judgement, individual responsibility and an open mind, as well as how to think, propaganda provides ready-made judgements for the un-thinking, promotes a closed mind, and tells people what to think.

However, what about the vast majority of high-school textbooks in US history that virtually ignore the contributions of blacks and other minorities 'to the US scene' (Aronson, 1992)? Are such books merely imparting knowledge? A recent demonstration of 'history as doctrine' is described in Box 24.2.

Box 24.2 Changing the history of war

- In 1997, a history professor in Japan won a 32-year fight to expose one of the darkest chapters in his country's wartime history. Saburo Ienaga won a Supreme Court ruling that censorship of references in his books to a germ warfare group (Unit 731) were 'unlawful'.
- Unit 731 conducted biological warfare experiments such as injecting prisoners with anthrax and cholera, exposing them to sub-zero temperatures, and manufacturing bubonic plague bombs (the latter killing thousands of Chinese civilians). None of the 3000 Chinese, Korean, Russian and Mongolian prisoners survived, many being dismembered alive to monitor the progress of the diseases through their bodies.
- The Japanese government has never acknowledged these activities, let alone apologised for them. In August 1997, the Supreme Court in Tokyo ruled that the Japanese education ministry acted illegally when it censored a proposed textbook by Mr Ienaga, but it upheld its right to continue screening all textbooks and removing anything it finds objectionable, including references to war crimes.

(Source: *Daily Mail*, 30 August 1997)

Advertising

An interesting link between psychology and advertising comes in the form of J.B. Watson, the founder of behaviourism (see Chapter 1). Following dismissal from his academic position at Johns Hopkins University, during which he devised health promotion films on venereal disease for the American military (propaganda?), Watson joined the J. Walter Thompson advertising agency, becoming one of the first and most successful applied psychologists (Banyard & Hayes, 1994).

Scott (1909, in Brown, 1963) wrote the first textbook published in Britain on advertising. In it, he identified a

number of principles, the most fundamental being *association*. Not until the late 1930s did advertisers discover Freud – but little came of it until the late 1940s and early 1950s (Brown, 1963).

ASK YOURSELF...

- Taking some advertisements you're familiar with, try to identify the way that (a) association (as demonstrated by classical conditioning: see Chapter 11), and (b) aspects of Freud's psychoanalytic theory (see Chapter 42) are used. Are these 'techniques' more likely to influence:
  - developing a need (i.e. convincing people they want or need the product)
  - noticing the product
  - purchasing the product
  - behaviour after the purchase (encouraging repeat purchases)?

Based on Banyard, 1996)

Subliminal advertising

This is by far the most controversial aspect of advertising. It originated with Jim Vicary, an American market researcher, who arranged with the owner of a New Jersey cinema to install a second special projector which, during a film, flashed on the screen phrases such as 'Hungry? Eat Popcorn' and 'Drink Coca-Cola'. These were either flashed so quickly, or printed so faintly, that they couldn't be consciously perceived ('*subliminal perception*' means recognition without awareness), even after a warning that they were about to appear.

Films treated in this way were alternated with untreated ones throughout the summer of 1956. In the former, sales of popcorn rose by almost 50 per cent and soft drinks by about 18 per cent. Vicary himself believed it unlikely that a subliminal stimulus could produce any response at all, unless prospective customers already intended buying the product. Nevertheless, subliminal advertising caused a storm of protest in the American press, and, later on, in the UK too.



Linda Blair as Regan, the possessed child in *The Exorcist*



Judas Priest in concert (1990)

Seeking to scare, rather than sell, a movie producer used a similar technique to Vicary's to flash pictures of a skull and the word 'blood' at key points in pairs of horror movies (Packard, 1957). Despite subliminal messages being legally outlawed (even before it was established whether they really worked), they made a comeback in the mid-1970s. In *The Exorcist* (1974), for example, a death mask was flashed on to the screen subliminally and, more recently, in order to reduce theft, several department stores in America began mixing barely audible and rapidly repeated whispers (such as 'I am honest. I will not steal') with their piped music. Many stores reported dramatic decreases in shoplifting. Also, audio cassette tapes are readily available which supposedly cure stress with soothing sub-audible messages covered by mood music or the ambient sounds of nature (Zimbardo & Leippe, 1991).

In 1990, the heavy metal band Judas Priest went on trial for triggering a suicide attempt by two young fans through, allegedly, recording the repeated subliminal message 'Do it' in one of their album tracks ('Better By You Better Than Me'). They won their case on the grounds that there's no scientific evidence that subliminal messages, even if perceived, could produce such extreme behaviour. However, it was this aspect of the trial that the media emphasised, rather than details of the troubled lives of the two young people concerned (Wadeley, 1996).

Box 24.3 Are subliminal messages effective?

To be effective, subliminal stimuli:

- must be able to influence judgements when superimposed on consciously attended-to material; subliminals *can* have an impact even when presented simultaneously with something that dominates conscious attention

- must affect general reactions; so, in the popcorn/Coca-Cola example, Vicary didn't want the audience to like *the words* 'Hungry? Eat Popcorn' more than they did before, but to have an increased desire to eat popcorn that would lead to buying more
- need to be strong and persistent enough to affect the mental processes that lead to subsequent directed behaviour; there's little relevant evidence.

Subliminal *sounds* are less likely to be effective than visual messages, since they're apt to go *totally* unregistered if attention is given to other sounds. According to Pratkanis *et al.* (1990), subliminal 'self-help' tapes have little, if any, therapeutic effect (not even a potentially beneficial placebo effect: see Chapter 45).

According to Zimbardo & Leippe (1991):

... so far none of the more fabulous claims for subliminals have been borne out by well-controlled and replicable studies. And while some of the touted subliminal techniques merit scientific study, others are simply not possible given what is known about the functioning of the human mind ...

Based on Zimbardo & Leippe (1991)

Are subliminal messages ethically unacceptable?

ASK YOURSELF...

- Before reading on, try to identify some of the ethical objections to any form of subliminal advertising.
- How relevant is the evidence presented in Box 24.3 to the question of ethics?

As we noted earlier, subliminal advertising was banned in the 1950s both in the UK and the USA. The British Institute of Practitioners in Advertising published a booklet (*Subliminal Communication,* 1958, in Brown, 1963) and banned all its 243 affiliated agencies from using this type of advertising. It states:

The free choice by the public to accept or reject is an integral part of all forms of professionally accepted advertising and does not appear to be available to recipients of subliminal communication.

Whether subliminal messages are unethical depends on the ethics of social influence and persuasion in general (Zimbardo & Leippe, 1991). It's widely agreed that *any* technique used to influence others (excluding physical coercion) is unethical if it:

- *relies on deception* – subliminals are deceptive to the extent that their users keep their use a secret, but, conceivably, they might still be effective even when it's openly announced that they're present
- *prohibits exposure to opposing messages* ('denial of the other side') – this doesn't apply to subliminals (but is relevant for evaluating attempts to indoctrinate people, as used by the Moonies, for example: see above)
- *unfairly prevents efforts to resist it* – it's here that subliminals can be viewed as unethical in the extreme; we cannot defend against something we don't know about and, by definition, we don't know about subliminals. Unlike other forms of influence, such as the image-processing of political candidates, or classical conditioning, we cannot resist the influence of subliminals through being observant and mindful; it's only later on – at the time of behavioural decision – that we may ask ourselves why we feel a certain way.

For Zimbardo & Leippe (1991):

... if subliminal influence should prove to work outside the laboratory in advertising contexts, it would seem highly unethical to use it – mainly because it deprives people of much of their opportunity to resist it.

THEORIES OF ATTITUDE CHANGE

The most influential theories of attitude change have concentrated on the principle of *cognitive consistency.* Human beings are seen as internally active information-processors, who sort through and modify a large number of cognitive elements in order to achieve some kind of cognitive coherence. This need for cognitive consistency means that theories such as Heider's *balance theory* (1958), Osgood and Tannenbaum's *congruity theory* (1955), and Festinger's *cognitive dissonance theory* (1957) aren't just theories of attitude change, but are also theories of human motivation (see Chapter 9).

Cognitive dissonance theory (CDT)

According to *cognitive dissonance theory* (CDT), whenever we simultaneously hold two cognitions which are psychologically inconsistent, we experience *dissonance.* This is a negative drive state, a state of 'psychological discomfort or tension', which motivates us to reduce it by achieving consonance. Attitude change is a major way of reducing dissonance. Cognitions are 'the things a person knows about himself, about his behaviour and about his surroundings' (Festinger, 1957), and any two cognitions can be consonant (A implies B), dissonant (A implies not-B) or irrelevant to each other.

For example, the cognition 'I smoke' is psychologically inconsistent with the cognition 'smoking causes cancer' (assuming that we don't wish to get cancer).

ASK YOURSELF...

- How might someone who smokes try to reduce dissonance?

Perhaps the most efficient (and certainly the healthiest!) way to reduce dissonance is to stop smoking, but many

people will work on the other cognition; for example, they might:

- belittle the evidence about smoking and cancer (e.g. 'The human data are only correlational')
- associate with other smokers (e.g. 'If so-and-so smokes, then it can't be very dangerous')
- smoke low-tar cigarettes
- convince themselves that smoking is an important and highly pleasurable activity.

These examples illustrate how CDT regards human beings not as rational but *rationalising* creatures: attempting to *appear* rational, both to others and to themselves.

Dissonance following a decision

If we have to choose between two equally attractive objects or activities, then one way of reducing the resulting dissonance is to emphasise the undesirable features of the one we've rejected. This adds to the number of consonant cognitions and reduces the number of dissonant ones.

This was demonstrated in a study by Brehm (1956). Female participants had to rate the desirability of several household appliances on an eight-point scale. They then had to choose between two of the items (their reward for participating). For one group the items were ½ to 1½ points apart on the scale (*high dissonance condition*), while for a second group they were a full three points apart (*low dissonance condition*). When they were asked to re-evaluate the items they'd chosen and rejected, the first group showed increased liking for the chosen item and decreased liking for the rejected one.

CDT also predicts that there'll be *selective exposure* to consonant information: seeking consistent information which isn't present at the time. However, selective perception also includes *selective attention* (looking at consistent information which is present) and *selective interpretation* (perceiving ambiguous information as being consistent with our other cognitions). According to Fiske & Taylor (1991), the evidence overall is stronger for selective attention and interpretation than for selective exposure.

Dissonance resulting from effort

When a voluntarily chosen experience turns out badly, the fact that we chose it motivates us to try to think that it actually turned out well. The greater the sacrifice or hardship associated with the choice, the greater the dissonance and, therefore, the greater the pressure towards attitude change (the *suffering-leads-to-liking effect*).

KEY STUDY 24.4 Preferring things that turn out for the worst (Aronson & Mills, 1959)

- Female college students volunteered for a discussion on the psychology of sex, with the understanding that the research was concerned with the dynamics of group discussion. Each student was interviewed individually, and asked if she could participate without embarrassment; all but one said yes.
- If a student had been assigned to the *control condition*, she was simply accepted. But for acceptance to the *severe embarrassment condition*, she had to take an 'embarrassment test' (reading out loud to a male experimenter a list of obscene words and some explicit sexual passages from modern novels – remember the year was 1959!). For acceptance to the *mild embarrassment condition*, she had to read aloud words like 'prostitute' and 'virgin'.
- They then all heard a tape-recording of an actual, extremely dull, discussion (by a group which they believed they'd later join) about sex in lower animals.
- They then had to rate the discussion, and the group members, in terms of how interesting and intelligent they found them.
- As predicted, the *severe embarrassment group* gave the *most positive* ratings – because they'd experienced the greatest dissonance!

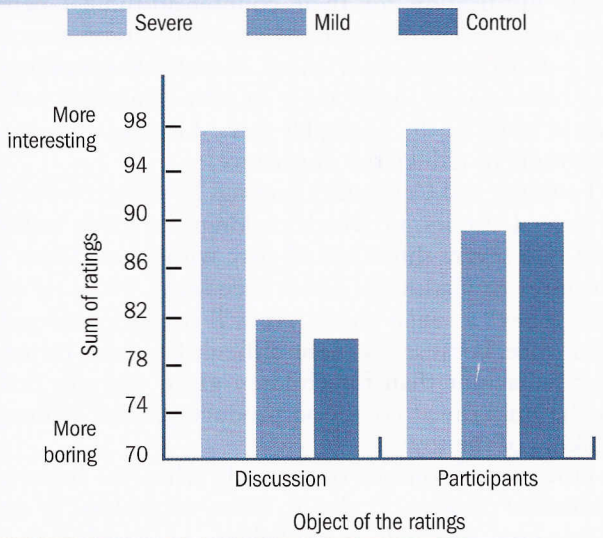


Figure 24.5 Female students' ratings of how interesting a group discussion was in relation to degrees of embarrassment which they suffered in order to get accepted for the discussion (based on Aronson & Mills, 1959)

Engaging in counter-attitudinal behaviour

This aspect of CDT is of most relevance to our earlier discussion of the relationship between attitudes and behaviour.

KEY STUDY 24.5 The '1 dollar/20 dollar' experiment (Festinger & Carlsmith, 1959)

- College students were brought, one at a time, into a small room to work for 30 minutes on two extremely dull and repetitive tasks (stacking spools and turning pegs).

- Later, they were offered either 1 dollar or 20 dollars to enter a waiting room and to try to convince the next 'participant' (in fact, a female stooge) that the tasks were interesting and enjoyable.
- Common sense would predict that the 20-dollar students would be more likely to change their attitudes in favour of the tasks (they had more reason to do so), and this is also what *reinforcement/incentive theory* (Janis *et al.*, 1965) would predict (the greater the reward/incentive, the greater the attitude change).
- However, as predicted by CDT, it was in fact the 1-dollar group that showed the greater attitude change (the *less-leads-to-more effect*).

ASK YOURSELF...

- How would CDT explain these findings? (You first need to ask yourself who experienced the greater dissonance.)

The large, 20-dollar incentive gave those participants ample justification for their counter-attitudinal behaviour, and so they experienced very *little* dissonance. But the 1-dollar group experienced considerable dissonance: they could hardly justify their counter-attitudinal behaviour in terms of the negligible reward (hence, the change of attitude to reduce the dissonance).

Festinger and Carlsmith's findings have been replicated by several studies, in which children are given either a mild or a severe threat not to play with an attractive toy (Aronson & Carlsmith, 1963; Freedman, 1965). If children obey a *mild* threat, they'll experience *greater* dissonance, because it's more difficult for them to justify their behaviour than for children given a severe threat. So, the mild threat condition produces greater reduction in liking of the toy.

However, dissonance occurs only when the behaviour is *volitional* (voluntary); that is, when we feel we've acted of our own free will. If we believe we had no choice, there's no dissonance, and hence no attitude change. A study by Freedman (1963) shows that dissonance theory and reinforcement theory aren't mutually exclusive; instead, they seem to apply to voluntary and involuntary behaviour respectively.

Self-perception theory (SPT)

According to Bem's *self-perception theory* (SPT) (1965, 1967), the concept of dissonance is both unnecessary and unhelpful. Any self-report of an attitude is an *inference* from observation of one's own behaviour, and the situation in which it occurs. This is because we don't have 'privileged access' to our own thoughts and feelings, but find out about them in the same way as we learn about other people's. (Bem was a behaviourist.)

If the situation contains cues (such as the offer of a large 20-dollar incentive) which imply that we might have behaved that way regardless of how we personally felt (we lie about the task being interesting even though it was boring), then we don't infer that the behaviour reflected our true attitudes. But in the absence of obvious situational pressures (1-dollar condition), we assume that our attitudes are what our behaviour suggests they are.

ASK YOURSELF...

- How could you account for Festinger and Carlsmith's results in terms of *attributional principles* (see Chapter 23)?

In attributional terms, the 20-dollar group can easily make a *situational attribution* ('I did it for the money'), whereas the one-dollar group had to make a *dispositional attribution* ('I did it because I really enjoyed it'). Bem combined attributional principles with his basic behaviourist beliefs.

An evaluation of CDT and SPT

- Eiser & van der Pligt (1988) believe that, conceptually, it's very difficult to distinguish between the two theories. Perhaps, as with CDT and incentive theories, both processes operate but to different extents under different circumstances. Fazio *et al.* (1977), for example, argue that dissonance may apply when people behave in a way which is contrary to their initial attitude (*counter-attitudinal behaviour*), while self-perception may apply better where their behaviour and initial attitude are broadly consistent (*attitude-congruent behaviour*). According to Fiske (2004), Bem's theory best accounts for those circumstances where we don't know our own mind or attitudes ahead of time.
- Zanna & Cooper's (1974) experiment provides support for *both* CDT and SPT.

KEY STUDY 24.6 Is there a dissonance-reduction pill? (Zanna & Cooper, 1974)

- Zanna and Cooper had participants write a counter-attitudinal essay under instructions that implied either high or low freedom of choice.
- Consistent with previous findings, the prediction that high-choice participants change their opinions more than low-choice participants was confirmed.
- The novel feature of the experiment was that participants were also given a placebo pill: they were either told it would make them feel tense or relaxed, or they were told nothing about it at all.

ASK YOURSELF...

- The dissonance theory prediction was upheld when participants were given no information about the pill, and upheld even more strongly when they were

told it would relax them. But when they were told it would make them feel tense, no difference between the high- and low-choice conditions was found. How can you explain these findings?

- If participants believe the pill will either relax them or have no effect, and they also believe they're acting of their own free will, they change their opinions, presumably because they experience an internal state of dissonance. But if told the pill will make them tense, they will (mis)attribute their tension to the pill, and so little attitude change will occur (as is also true of low-freedom-of-choice participants). This attributional explanation is consistent with SPT, and so the Zanna and Cooper experiment offers support for both Festinger and Bem.
- Fiske (2004) believes that one of the most provocative lines of research to have emerged from SPT is the *over-justification effect*. If one has a situational justification for one's behaviour (such as an external reward), then one doesn't need to make a dispositional attribution for it. For example, if a child enjoys reading and receives a gold star for each book completed, s/he may infer that the reading is motivated by the reward. If the rewards are discontinued, the reading may too (the opposite effect to what was intended).
- Conflict or inconsistency often arise between two attitudes, rather than between an attitude and behaviour. Both situations can be explained by CDT, but because SPT is based on attribution principles, it requires some overt behaviour from which we then make an inference about our attitudes.
- According to some *impression management theorists* (e.g. Schlenker, 1982; Tedeschi & Rosenfield, 1981: see Chapter 22), many dissonance experiments might not reflect genuine cases of 'private' attitude change (a drive to be consistent). Rather, they reflect the need to *appear* consistent, and hence to avoid social anxiety and embarrassment, or to project positive views of one's own identity. So, the 1-dollar group's attitude change is genuine, but is motivated by *social* (rather than *cognitive*) factors.

CRITICAL DISCUSSION 24.2: Are theories of attitude change culturally biased?

- Although lying to another 'participant' (as in the 1-dollar/20-dollar experiment) may contravene the norms of many cultures, other commonly used dissonance paradigms may *not* induce the same level of dissonance in all cultures (Cooper *et al.*, 2004).
- For example, Heine & Lehman (1997) used the 'free choice' method used by Brehm (1956: see above, page 419). Japanese and Canadian participants were asked to rate a selection of western rock and pop CDs, then asked to choose between two that they'd rated similarly. The Canadians showed the usual dissonance effect, but the Japanese didn't. Heine and Lehman concluded that Japanese people may not be as concerned about the inconsistency that arises when they 'lose' the positive aspect of the unchosen option and 'accept' the negative aspects of the chosen option.
- The tendency to change one's attitude or behaviour in order to be more consistent (and so reduce dissonance) reflects a need to view behaviour as driven by *internal* factors. But members of *collectivist* cultures don't demonstrate these tendencies. They're willing to sacrifice consistency to maintain a sense of harmony with others (Nagayama Hall & Barongan, 2002). It may even be considered selfish to act according to one's own desires, or to express one's attitudes, if they make others feel uncomfortable (Fiske *et al.*, 1998).
- The evidence for the overjustification effect is strong in the USA, but it rests on that culture's bias towards individual autonomy and perceived choice (Fiske, 2004). In more *interdependent* (i.e. collectivist) cultures, children's intrinsic motivation increases when choices are made *for them* by trusted authorities and peers (Iyengar & Lepper, 1999).

- Despite these and other challenges and reconceptualisations, Hogg & Vaughan (1995) maintain that:

> ... cognitive dissonance theory remains one of the most widely accepted explanations of attitude change and many other social behaviours. It has generated over one thousand research studies and will probably continue to be an integral part of social psychological theory for many years ...

CHAPTER SUMMARY

- The **three-component model** of attitude structure sees attitudes as comprising **affective**, **cognitive** and **behavioural** components. Attitudes have much in common with beliefs and values, but they need to be distinguished.
- Katz identifies the **knowledge**, **adjustive**, **value-expressive** and **ego-defensive functions** of attitudes.
- Most methods of **attitude measurement** rely on verbal reports of people's opinions about the attitude object. They assume that attitudes can be quantified, and that the same statement has the same meaning for all respondents.
- Thurstone's **equal appearing interval scale**, the **Likert scale**, the **Guttman scalogram method**, the **semantic differential** and **sociometry** are some of the major **self-report methods** used in attitude measurement.

- Alternative methods attempt to get round problems such as **acquiescent response set** and the effects of **social desirability**. These include the **lost letter** and **bogus pipeline techniques**. Whatever their methodological advantages, they pose very serious ethical questions.
- Early research into the **relationship between attitudes and behaviour** showed that attitudes are very poor predictors of behaviour. But attitudes represent only one of several determinants of behaviour, including situational factors.
- Attitudes can predict behaviour, provided there's a close **correspondence** between the way the two variables are defined and measured (the **principle of compatibility**). Also, measures of a representative sample of behaviours relevant to the attitude must be made (the **aggregation principle**).
- According to **discursive psychologists**, attitudes are **constructed** in the course of social interaction, rather than possessed by isolated individuals.
- **Persuasive communication** has traditionally been studied in terms of the influence of four interacting factors: the **source** of the persuasive message, the **message** itself, the **recipient** of the message, and the **situation/context**.
- **Theories of systematic processing** see the impact of persuasive messages as dependent on a sequence of processes, including **attending** to the message, **comprehending** it, **accepting** its conclusions, **retaining** it and **acting** as a result.
- The more recent **cognitive perspective** focuses on **why** people change their attitudes, not merely **when** and **how** it's likely to happen. The **heuristic model of persuasion**, for example, explains why we're more likely to be persuaded when the situation isn't personally involving or if the arguments are convincing.
- People can be frightened into attending to, comprehending, accepting and retaining a message, but the **high availability factor** is necessary for any behaviour change to take place.
- People also need to feel personally **vulnerable** if fear appeals are to have any impact. There appears to be an **inverted U-shaped curve** in the relationship between fear and attitude change.
- **Propaganda** tries deliberately to limit people's choices, either through **censorship** or through use of **caricature**, **stereotypes**, **emotive names** and **repetitive slogans**. By contrast, **education** encourages independent thinking, individual responsibility and an open mind.
- **Subliminal messages** can influence judgements when superimposed on consciously attended-to material, producing general reactions (such as increasing the desire to eat popcorn). However, their influence on behaviour is much less certain.
- The major theories of attitude change share the basic principle of **cognitive consistency**. The most influential of these is Festinger's **cognitive dissonance theory** (CDT).
- **Dissonance** is most likely to occur after making a very **difficult choice/decision**, when putting ourselves through **hardship** or making a **sacrifice** only to find it was for nothing, or when engaging **voluntarily** in **counter-attitudinal behaviour**.
- Bem's **self-perception theory** (SPT) explains the results of dissonance experiments in terms of **attributional principles**. CDT may apply under conditions of 'true' counter-attitudinal behaviour, while SPT applies to attitude-congruent behaviour.
- **Impression management theory** stresses the **social** rather than the **cognitive** motivation underlying attitude change.
- Like most western psychology, theories of attitude change are **culturally biased**.

Links with other topics/chapters

- Strong attitudes influence behaviour partly through their automatic activation from within *memory* (Chapter 17).
- Personal (direct) experience also helps activate attitudes automatically. This can be explained by the *mere exposure effect* (Zajonc, 1968), according to which the more contact we have with something or somebody, the more we like them (Chapter 28).
- Heuristic models of attitude change have their counterparts in *problem-solving* (Chapter 20), *interpersonal perception* (Chapter 22) and *social cognition/attribution* (Chapter 23).
- The TRA and TPB are major theories used to explain and predict a wide range of *health-related behaviours* (Chapter 12).
- The *stereotyping* used in propaganda is the cognitive component of *prejudice* (Chapter 25).
- Aronson's point regarding US history books ignoring the contributions of blacks and other minorities is paralleled by the view that psychology discovers 'facts' about human behaviour, which exist *objectively* (Chapters 3) and *universally* (Chapter 47).
- The overjustification effect is sometimes referred to as the *paradox of reward,* which is relevant to the debate on *free will* (Chapter 49).

Prejudice as an attitude
- Definitions of prejudice
- Institutionalised prejudice and discrimination
- Sexism and psychology
- Racism in psychiatry

Theories of prejudice and discrimination
- Prejudice and personality
  - *The authoritarian personality*
  - *How does the authoritarian personality become prejudiced?*
  - *Evaluation of the authoritarian personality theory*
  - *The open and closed mind*
  - *Scapegoating: the frustration–aggression hypothesis*
- The role of environmental factors
  - *Relative deprivation theory*
- Realistic group conflict theory (RGCT)
- The influence of group membership
  - *Minimal groups*
  - *An evaluation of minimal group experiments*
  - *Social identity theory (SIT)*
  - *Evaluation of SIT*

Reducing prejudice and discrimination
- The contact hypothesis
  - *Equal status contact*
  - *Pursuit of common (superordinate) goals*

Conclusions: what to do with stereotypes?

Chapter summary

Links with other topics/chapters

25

PREJUDICE AND DISCRIMINATION



... fifty years after the [Nazi] extermination and concentration camps were liberated, genocide continues unabated, neither punished nor prevented. In what used to be ... [Yugoslavia], torture, murder, rape, and starvation are everyday occurrences ... (Hirsch, 1995)

INTRODUCTION AND OVERVIEW

While genocide – the systematic destruction of an entire cultural, ethnic or racial group – is the most extreme form of discrimination, the prejudice that underlies it is essentially the same as that which underlies less extreme behaviours.

Prejudice is an *attitude* that can be expressed in many ways, or which may not be overtly or openly expressed at all. Like other attitudes, prejudice can be regarded as a *disposition* to behave in a prejudiced way (to practise *discrimination*), so the relationship between prejudice and discrimination is an example of the wider debate concerning the attitude–behaviour relationship. As we saw in Chapter 24, LaPiere's early study of this relationship was concerned with anti-Oriental prejudice and discrimination in the USA in the 1930s.

Theories of prejudice and discrimination try to explain their origins: how do people come to be prejudiced and to act in discriminatory ways? Answers to these questions potentially answer the further question: how can they be reduced or even prevented altogether? This, of course, has much greater practical significance for people's lives, as the quote from Hirsch conveys.

PREJUDICE AS AN ATTITUDE

As an *extreme* attitude, prejudice comprises the three components common to all attitudes:

- the *cognitive* component is the *stereotype* (see Chapter 22)
- the *affective* component is a *strong feeling of hostility*
- the *behavioural* component can take different forms.

Allport (1954) proposed five stages of this component:

1. *antilocution* – hostile talk, verbal denigration and insult, racial jokes
2. *avoidance* – keeping a distance but without actively inflicting harm
3. *discrimination* – exclusion from housing, civil rights, employment
4. *physical attack* – violence against the person and property
5. *extermination* – indiscriminate violence against an entire group (including genocide).

As we noted in the *Introduction and overview*, 'discrimination' is often used to denote the behavioural component, while 'prejudice' denotes the cognitive and affective components. But just as the cognitive and affective components may not necessarily be manifested behaviourally (as in LaPiere's study), so discrimination doesn't necessarily imply the presence of cognitive and affective components. People may discriminate if the prevailing social norms dictate that they do so, and if their wish to become or remain a member of the discriminating group is stronger than their wish to be fair and egalitarian (see below). According to Fiske (2004), the affective component is crucial. This is illustrated by the findings that (a) individual differences in emotional prejudice correlate with discrimination better than do stereotypes (Dovidio *et al.*, 1996), and (b) affective reactions to gay men predict discrimination far better than do stereotypes (Talaska *et al.*, 2003). Although the relationship between prejudice and discrimination is moderate, it's comparable to the general attitude–behaviour relationship (Fiske, 2004: see Chapter 24).

Definitions of prejudice

Although most definitions of prejudice stress the hostile, negative kind, prejudice can also be positive (just as stereotypes can be positive such as, 'women are caring', or neutral, such as 'men are tall'). However, the research which tries to identify how prejudice arises, and how it might be reduced, focuses on hostile prejudice.

Table 25.1 Some definitions of prejudice and discrimination

'... an antipathy based on faulty and inflexible generalisation directed towards a group as a whole or towards an individual because he is a member of that group. It may be felt or expressed.' (Allport, 1954)
'Prejudice is an attitude (usually negative) toward the members of some group, based solely on their membership in that group ...'. (Baron & Byrne, 1991)
'Prejudice is a learned attitude towards a target object that typically involves negative affect, dislike or fear, a set of negative beliefs that support the attitude and a behavioural intention to avoid, or to control or dominate, those in the target group ... Stereotypes are prejudiced beliefs ... when prejudice is acted out, when it becomes overt in various forms of behaviour, then discrimination is in practice ...'. (Zimbardo & Leippe, 1991)

The definitions in Table 25.1 locate prejudice squarely *within the individual* – it's an attitude which represents one aspect of social cognition. However, Vivian & Brown (1995) prefer to see prejudice as a special case of intergroup conflict. Although conceptually distinct, prejudice and intergroup conflict often coexist. For Vivian and Brown, intergroup conflict occurs when:

> ... people think or behave antagonistically towards another group or its members in terms of their group membership and seem motivated by concerns relating to those groups ...

They also distinguish intergroup conflict and *interpersonal* conflict, a distinction we shall return to when discussing attempts to reduce prejudice (see pages 435–438).

Defining prejudice in terms of intergroup conflict 'lifts' it to the social plane. Consistent with this is Fernando's (1991) distinction between 'racial prejudice' and 'racism': the former denotes an attitude possessed by an individual, while the latter refers to a political and economic ideology, which is a characteristic of society. Similarly, Littlewood & Lipsedge (1989) argue that:

Racist attitudes may be manifest as a highly articulated set of beliefs in the individual, but they are also found in less conscious presuppositions, located in society as a whole ...

Strictly, then, it is societies (or institutions, such as the police or the armed forces) that are racist, and individuals who are racially prejudiced.

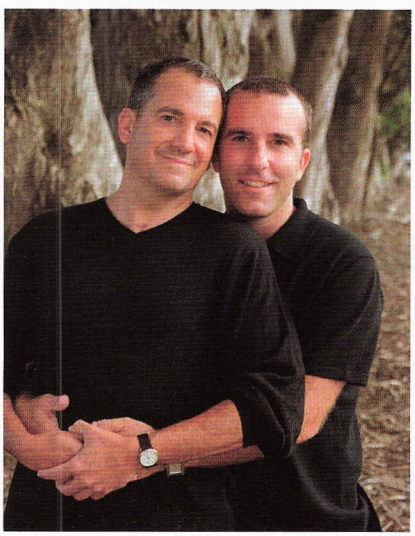
ASK YOURSELF...

- Apart from racism, what other '-isms' are there that meet these criteria for being social, rather than individual, phenomena?

Until quite recently, most of the theory and research into prejudice and discrimination were concerned with racism, '... the quite specific belief that cultural differences between ethnic groups are of biological origin and that groups should be ranked in worth' (Littlewood & Lipsedge, 1989). However, gender (as in *sexism:* see Chapters 36 and 47), sexual orientation or preference (as in *heterosexism:* see Chapters 43 and 47) and age (as in *ageism:* see Chapter 39) can all be targets for hostility and discrimination.

CRITICAL DISCUSSION 25.1 Prejudice and discrimination in health care

- According to Rose & Platzer (1993), the attitudes of many nurses are grounded in their assumptions about people's heterosexual nature and their lack of knowledge about different lifestyles and how these affect people's health. Ignorance about how lesbians and gay men live can lead nurses to ask inappropriate questions during assessments, leading them to form mistaken judgements.
- For example, one lesbian patient who was receiving a cervical smear test was asked if she was sexually active. After saying she was, she was asked what contraceptive she used and replied 'none'. She was then asked if she was trying to become pregnant, which she wasn't. She had to disclose her lesbianism in order to ensure that health professionals didn't make incorrect assumptions about her, which could have led to an incorrect diagnosis.
- In another example, one patient's charts were labelled 'high risk'. These labels, which were clearly visible to other patients and members of staff, were there simply because he was gay and so was seen as being at risk of having HIV – the nurses simply assumed that gay men were likely to be HIV-positive and that heterosexual men weren't. Such assumptions are, of course, linked to stereotypes about what gay men do, rather than to a knowledge of sexual behaviours, which can differ widely regardless of sexual orientation.
- One nurse in an accident and emergency department refused to give a male patient an analgesic suppository (a pain-relieving capsule inserted into the anus) 'in case he liked it'. Such examples suggest that homosexuality is seen only in terms of sexual behaviour and not lifestyle, and this interferes with nurses' ability to see patients as individuals with particular nursing needs.
- Another false but commonplace belief is that lesbians and gay men are less discriminating in their sexual habits than heterosexuals, and that they'd want to engage in sexual activity in any setting and regardless of personal preferences (Rose & Platzer, 1993: see Chapter 28).



Sexual orientation is a target for hostility and discrimination in a heterosexist society

Institutionalised prejudice and discrimination

Critical Discussion 25.1 illustrates that a great deal of prejudice and discrimination is unconscious, reflected in basic, stereotyped assumptions that we make about others. These assumptions influence our behaviour towards them, which may not be necessarily overtly hostile or 'anti'. It's this pervasive form of prejudice and discrimination that's perhaps the most difficult to break down, because we're unaware of it, and because it reflects institutionalised heterosexism, racism and so on.

Both Cochrane (1983) and Littlewood & Lipsedge (1989) show how ethnic minorities in England are more often hospitalised for mental illness than non-black English. This is interpreted as reflecting an implicit, unwitting, prejudice against minority groups which pervades the National Health Service as an institution. This definition of 'institutionalised racism' as 'unwitting' was included in the Government Report (1999) on the behaviour of the police in their investigation of the murder of the black London teenager, Stephen Lawrence (in Horton, 1999).



Stephen Lawrence

CRITICAL DISCUSSION 25.2 The concept of race

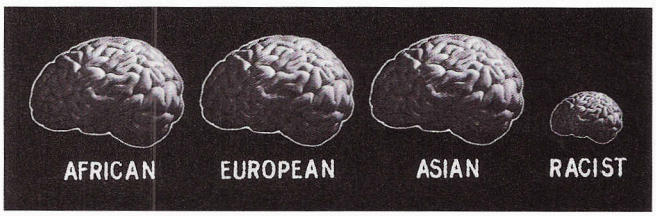
- The classification of people into racial types based on physical appearance (mainly skin colour) has a long history in western culture. Darwin's (1859) theory of evolution introduced a new concept of 'race', based on his description of numerous 'races' within each species of animals. While human beings as a whole constitute 'a species' with fertile mating within it, individual (human) 'races' represent 'varieties' or 'subspecies', each being partially isolated reproductively from the others (Fernando, 1991). The essential point here is that *individuals* differ much more from each other than do groups.
- In his *Descent of Man* (1871), Darwin talked of the likely extinction of 'savage races', because of their inability to change habits when brought into contact with 'civilised races'. He then joined Galton in calling for the control of how different races breed (*eugenics*) in order to ensure the survival of the latter.
- Twentieth-century genetics at first described different races in terms of blood types, but this proved unreliable. More recently, scientific advances have enabled geneticists to identify human genes that code for specific enzymes and other proteins. But the genetic differences between the classically described races (European, Indian, African, East Asian, New World, and Oceanian) are, on average, only slightly higher (10 per cent) than those which exist between nations within a racial group (6 per cent), and the genetic differences between individual human beings within a population are far larger than either of these (84 per cent) (Fernando, 1991). According to Bamshad & Olson (2003), race defined as 'genetically discrete groups' *doesn't* exist.
- Nevertheless, the traditional view persists that people resembling each other in obvious physical ways (such as skin colour and hair texture) belong to a 'race' that represents a genetically distinct human type. Anthropologists, biologists and medical people are all guilty of perpetuating the myth, despite the widely held belief that 'race' has ceased to have a scientific meaning.
- These outward signs are determined by a handful of genes. But the other genes of two people of the same 'race' can be very different, and, conversely, two people of *different* 'races' can have more genes in common than two people of the *same* 'race' (Bamshad & Olson, 2003).
- 'Race' is a *social*, not a biological category. As Richards (1996a) points out:

  Any theory that puts Colin Powell, Shirley Bassey, Maya Angelou, Frank Bruno and Snoop Doggy Dogg in the same 'isolated inbreeding population' cannot have much going for it. Humanity is a single gene-pool, parts of which were relatively (rarely completely) isolated for longer or shorter periods of time.

- Similarly, Wetherell (1996) argues that 'race' is a social as opposed to a natural phenomenon:

  ... a process which gives significance to superficial physical differences, but where the construction of group divisions depends on ... economic, political and cultural processes ...

  She points out that many writers prefer to put quotation marks around 'race' to indicate that we're dealing with one possible social classification of people and groups, rather than an established biological or genetic reality.



Poster used during the 1997 European Year against Racism
Reproduced by permission of The Commission for Racial Equality

Sexism and psychology

The sexist nature of psychology is demonstrated in a variety of ways, including the biased nature of the study of sex differences (e.g. Unger, 1979: see Chapters 36 and 47) and discrimination against women within psychology itself. According to Paludi (1992), for example, the history of psychology is the history of the contributions of men, with women psychologists being kept largely invisible, despite their enormous contribution, both historically and currently. One manifestation of this is the devaluation (by men) of the areas of psychology in which women are traditionally more numerous and which they seem to prefer, compared with the traditionally 'male' areas. The former include person-oriented/service-

oriented fields, such as educational, developmental, clinical psychology and counselling, while the latter are the academic/experimental areas. These include learning and cognitive psychology, which are regarded (by men) as more scientifically rigorous and intellectually demanding (Paludi, 1992). Could it be that women are 'channelled' into certain fields of psychology, which then are defined as 'inferior' simply because they're populated mainly by women? Paludi sees certain individuals acting as *gatekeepers,* determining the career paths of others; in the case of psychology, the gatekeepers are usually men.

CRITICAL DISCUSSION 25.3 Scientific racism

- The attempt to present racist views as scientific 'fact' is revealed in the (not very subtle) form of 'scientific racism'. Chris Brand, a psychologist at the University of Edinburgh, had his book, *The g Factor: General intelligence and its implications*, withdrawn by the publisher (John Wiley) in April 1996 before its publication. He denies being a 'racist' while being 'perfectly proud to be a racist in the scientific sense', that is, a believer in the view that race and psychology have deep links (most likely genetic).
- According to Brand (quoted in Richards, 1996a), 'You won't find any psychologist of repute who has said anything different [than that black people have lower intelligence] since the turn of the century'.
- However, according to Richards, dozens of psychologists of unimpeachable repute (including Bartlett, Freud, Piaget and Skinner) have either disagreed or, more commonly, not even been interested in the question. Some who've agreed turn out not to have been so reputable after all. For example, Cattell (see Chapter 42) was pro-Hitler in the 1930s, a ruthless racist eugenicist all his life, who even contemplated genocide ('genthenasia'). Brand is simply wrong!

Racism in psychiatry

Cartwright (1851), an American psychiatrist, proposed two diagnostic categories meant to apply exclusively to black people (at the time of slavery).

- *Dysaesthesia Aethiopis* was a disease which afflicted all 'free negroes' without a white person to direct and take care of them, 'the natural offspring of negro liberty – the liberty to be idle … wallow in filth … indulge in improper food and drinks'. Symptoms included breaking, wasting and destroying everything they handled, tearing or burning their clothing, stealing from others to replace what they had destroyed, and apparent insensitivity to pain.
- *Drapetomania* was, quite simply, the disease which caused slaves to run away (Fernando, 1991: see Chapter 43).

THEORIES OF PREJUDICE AND DISCRIMINATION

Attempts to explain prejudice and discrimination fall into three broad categories:

1. those that see prejudice as stemming from *personality variables* and other aspects of the psychological make-up of individuals
2. those that emphasise the role of *environmental factors* (sometimes called the *conflict approach*)
3. those that focus on the effects of the mere fact of *group membership.*

Each approach may be important to a complete understanding of the causes of intergroup conflict and prejudice, and to their reduction (Vivian & Brown, 1995).

Prejudice and personality

The authoritarian personality

Adorno *et al.* (1950) proposed the concept of the *authoritarian personality* (in a book of the same name), someone who's prejudiced by virtue of specific personality traits which predispose them to be hostile towards ethnic, racial and other minority or outgroups.

Adorno *et al.* began by studying antisemitism in Nazi Germany in the 1940s, and drew on Freud's theories to help understand the relationship between 'collective ideologies' (such as fascism) and individual personality (Brown, 1985). After their emigration to the USA, studies began with over 2000 college students and other native-born, white, non-Jewish, middle-class Americans (including school teachers, nurses, prison inmates, and psychiatric patients). These involved interviews concerning their political views and childhood experiences, and the use of *projective tests* (in particular, the thematic apperception test/TAT: see Chapter 9) designed to reveal unconscious attitudes towards minority groups.



A banner reading 'Germans, don't buy from Jews' in front of a synagogue in Berlin, circa 1937

A number of scales were developed in the course of their research (see Table 25.2).

- *Antisemitism (AS) scale:* The 52 items were phrased so as to express a subtle hostility without seeming to offend the democratic values most respondents would feel bound to support, a kind of 'fair-minded and reasonable veneer' (Brown, 1965).
- *Ethnocentrism (E) scale:* The term 'ethnocentrism' was first defined by Sumner (1906) as: 'A view of things in which one's own group is the centre of everything, and all others are scaled and rated with reference to it ... each group ... boasts itself superior ... and looks with contempt on outsiders. Each group thinks its own folkways the only right one'. The scale comprised 34 items.
- *Political and economic conservatism (PEC) scale:* The central component of conservatism is attachment to things as they are, and a resistance to social change. This is the only scale to include items supporting both sides of the issues.
- *Potentiality for fascism (F) scale:* According to Brown (1965), Adorno *et al.* never referred to the F scale as the authoritarianism scale. But since it's supposed to identify the kind of personality the book is talking about, it's reasonable to suppose that the scale could also be correctly called the authoritarianism scale (as it has been in many subsequent research reports). The scale was revised several times during the course of the research, but the items never referred directly to minority groups or politico-economic issues. It was intended to measure implicit authoritarian and antidemocratic trends in personality, making someone with such a personality susceptible to explicit fascist propaganda. The 38 items were subclassified under nine general headings (six of which are included in Table 25.2).

Table 25.2 Sample items from the various scales used by Adorno *et al.* (1950)

Antisemitism (AS) scale	The trouble with letting Jews into a nice neighbourhood is that they gradually give it a typically Jewish atmosphere.
Ethnocentrism(E) scale	Negroes have their rights, but it's best to keep them in their own districts and schools and to prevent too much contact with whites.
Political and economic conservatism (PEC) scale	In general, full economic security is harmful; most men wouldn't work if they didn't need the money for eating and living.
Potentiality for fascism (F) scale	
1 Conventionalism	Obedience and respect for authority are the most important virtues children should learn.
2 Authoritarian submission	Young people sometimes get rebellious ideas, but as they grow up they ought to get over them and settle down.
3 Authoritarian aggression	Sex crimes, such as rape and attacks on children, deserve more than mere imprisonment; such criminals ought to be publicly whipped or worse.
4 Power and toughness	People can be divided into two distinct classes: the weak and the strong.
5 Projectivity	Nowadays when so many different kinds of people move around and mix together so much, a person has to protect himself especially carefully against catching an infection or disease from them.
6 Sex	Homosexuals are hardly better than criminals and ought to be severely punished.

Table 25.3 shows the correlations between the different scales.

Table 25.3 Correlations between scores on the different scales used by Adorno *et al.* (1950)

	AS	E	PEC	F
AS		0.80	0.43	0.53
E			0.57	0.65
PEC				0.57
F (final version)		0.75		

ASK YOURSELF...

- What conclusions can you draw from the correlations in Table 25.3?

The pattern of intercorrelations suggests that:

- scores on the AS, E and F scales all correlate with each other much more strongly than any of them does with the PEC score, and, following from this
- people who are antisemitic are also likely to be hostile towards 'Negroes', 'Japs' and any other minority group or 'foreigner' (all *outgroups*) – the authoritarian personality is prejudiced in a very *generalised* way.

What's the authoritarian personality like?

Typically, the authoritarians are hostile to people of inferior status, servile to those of higher status, and contemptuous of weakness. They're also rigid and inflexible, intolerant of ambiguity and uncertainty, unwilling to introspect feelings, and upholders of conventional values and ways of life (such as religion). This belief in

convention and intolerance of ambiguity combine to make minorities 'them' and the authoritarian's membership group 'us'; 'they' are by definition 'bad' and 'we' are by definition 'good'.

How does the authoritarian personality become prejudiced?

Based on the interview and TAT data, Adorno *et al.* claimed that authoritarians have often experienced a harsh, punitive, disciplinarian upbringing, with little affection. While they consciously have very high opinions of their parents, they often reveal considerable latent (unconscious) hostility towards them, stemming from the extreme frustration they experienced as children.

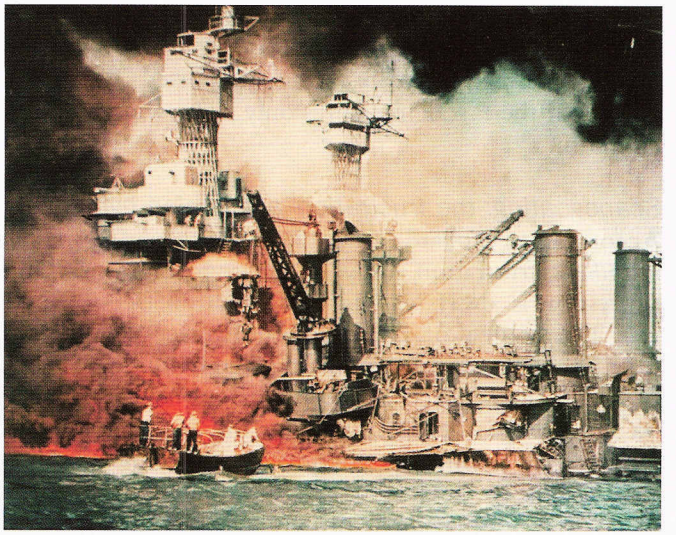
Drawing on Freudian theory, Adorno *et al.* proposed that such unconscious hostility may be *displaced* onto minority groups, which become the targets for the authoritarian's hostility. Authoritarians also *project* onto these groups their own unacceptable, antisocial impulses (especially sexual and aggressive), so that they feel threatened by members of these groups. They have very little self-understanding (insight), and their prejudice serves a vital *ego-defensive function:* it protects them from the unacceptable parts of themselves (see Table 24.2, page 407).

Evaluation of the authoritarian personality theory

While some evidence is broadly consistent with the theory, there are a number of serious methodological and other problems which make it untenable.

- The items on the AS, E and F scales (all Likert-type questions: see Chapter 24) were worded in such a way that agreement with them always implies antisemitism, ethnocentrism and potential fascism respectively. Adorno *et al.* recognised the possibility that *acquiescent response set* (see Chapter 24) might be a problem.
- The interview and TAT data were intended partly to validate the F scale. But the clinical interviews were flawed, since the interviewer knew the interviewee's F score. This represents a serious source of *experimenter bias* (see Chapter 3).
- According to Brown (1988), if prejudice is to be explained in terms of individual differences, how can it then be manifested in a whole population or at least a vast majority of that population? In pre-war Nazi Germany, for example (and in many other places since), consistent racist attitudes and behaviour were shown by hundreds of thousands of people, who must have differed on most other psychological characteristics.
- Similarly, how can the theory account for the sudden rise and fall of prejudice in particular societies at specific historical periods? Antisemitism in Nazi Germany grew during a decade or so, which is much too short a time for a whole generation of German families to have adopted new forms of childrearing practices giving rise to authoritarian and prejudiced children (Brown, 1988). Even more dramatic was the anti-Japanese prejudice among Americans following the attack on Pearl Harbor. Brown believes that such examples strongly suggest that:

  > ... the attitudes held by members of different groups towards each other have more to do with the objective relations between the groups – relations of political conflict or alliance, economic interdependence and so on – than with the familial relation in which they grew up!



The attack by Japan on Pearl Harbor in 1941 brought the USA into the Second World War

The open and closed mind

Another criticism of the authoritarian personality theory is that it assumed that authoritarianism is a characteristic of the *political right,* implying that there's no equivalent authoritarianism on the left. According to Rokeach (1960) 'ideological dogmatism' refers to a relatively rigid outlook on life and intolerance of those with opposing beliefs. High scores on the *dogmatism scale* reveal: (i) closedness of mind; (ii) lack of flexibility; and (iii) authoritarianism, regardless of particular social and political ideology.

Dogmatism is a way of *thinking,* rather than a set of beliefs (Brown, 1965). The dogmatic individual tends to accentuate differences between 'us and them' and displays *self-aggrandisement* (e.g. 'If I had to choose between happiness and greatness, I'd choose greatness'). S/he also has a *paranoid* outlook on life ('I often feel people are looking at me critically'), and is *uncompromising* in his/her beliefs and intolerant of others. These characteristics serve as defences against a sense of personal inadequacy.

Rokeach (1960) gave the F scale and the dogmatism scale to five English groups of different political persua-

sions, including a group of 13 communist students. While the communists scored low on the F scale, they had the highest dogmatism scores. This supported Rokeach's claim that the F scale measures only right-wing authoritarianism.

Scapegoating: the frustration–aggression hypothesis

According to Dollard *et al.*'s (1939) *frustration–aggression hypothesis,* frustration always gives rise to aggression, and aggression is always caused by frustration (see Chapter 29). The source of frustration (whatever prevents us from achieving our goals) might often be seen as a fairly powerful threat (such as parents or employers) or may be difficult to identify. Drawing on Freudian theory, Dollard *et al.* claim that when we need to vent our frustration but are unable to do this directly, we do so *indirectly* by displacing it on to a substitute target (we find a *scapegoat*).

ASK YOURSELF...

- Can you see any parallels between the frustration–aggression hypothesis and certain parts of Adorno *et al.*'s theory?



According to the frustration–aggression hypothesis, discrimination against outsiders (in this case eastern-European asylum seekers) is a form of displaced aggression

The choice of scapegoat isn't usually random. In England during the 1930s and 1940s, it was predominantly the Jews, who were replaced by West Indians during the 1950s and 1960s, and during the 1970s, 1980s and 1990s by Asians from Pakistan. In the southern USA, lynchings of blacks from 1880 to 1930 were related to the price of cotton: as the price dropped, so the number of lynchings increased (Hovland & Sears, 1940). While this is consistent with the concept of displaced aggression, the fact that whites chose blacks as scapegoats rather than some other minority group suggests that there are usually socially approved (legitimised) targets for frustration-induced aggression.

Limitations of the personality approach

- Several researchers (e.g. Billig, 1976; Brown, 1988; Hogg & Abrams, 1988) have argued that any account of prejudice and discrimination in terms of individuals (*intrapersonal behaviour*) is *reductionist* (see Chapter 49). In other words, the *social* nature of prejudice and discrimination requires a social explanation (in terms of *intergroup behaviour*).
- Adorno *et al.* imply that racism is the product of the abnormal personality of a small minority of human beings, rather than a social and political ideology. This distinction is of great practical as well as theoretical importance, because what's considered to be the cause of prejudice has very real implications for its reduction. Indeed, Adorno *et al.* recognised that *society* provides the content of attitudes and prejudice and defines the outgroups.
- According to Brown (1985), 'cultural or societal norms may be much more important than personality in accounting for ethnocentrism, outgroup rejection, prejudice and discrimination'.

The role of environmental factors

The impact of social norms: prejudice as conformity

Individual bigotry is only part of the explanation of racial discrimination. For example, even though overt discrimination has, traditionally, been greater in the southern USA, white southerners haven't scored higher than whites from the north on measures of authoritarianism (Pettigrew, 1959). So, clearly, *conformity to social norms* can prove more powerful as a determinant of behaviour than personality factors.



Racial discrimination in the southern USA during the 1950s was as much a way of life as apartheid in South Africa

Minard (1952) found that black and white coalminers in West Virginia followed a pattern of almost complete integration below ground, but almost complete segregation above! This makes sense only when viewed in terms of conformity to the norms which operated in those different situations.

> ***ASK YOURSELF...***
> • What do you think the two sets of norms may have been?

Pettigrew (1971) also found that Americans in the south are no more antisemitic or hostile towards other minority groups than those from the north (as the authoritarian personality explanation would require). In other words, prejudice *isn't* the generalised attitude which Adorno *et al.* claimed. According to Reich & Adcock (1976), the need to conform and not be seen as different may cause milder prejudices. But active discrimination against, and ill treatment of, minorities reflects a prejudice which already exists, and which is maintained and legitimised by conformity.

Relative deprivation theory

According to the frustration–aggression hypothesis, people experience frustration when they feel deprived of something they believe they're entitled to. The discrepancy between our actual attainments (such as standard of living) and expectations (the standard of living we feel we deserve) is our *relative deprivation* (Davis, 1959). When attainments suddenly fall short of rising expectations, relative deprivation is particularly acute, resulting in collective unrest. This is expressed as a J-curve (Davies, 1969).

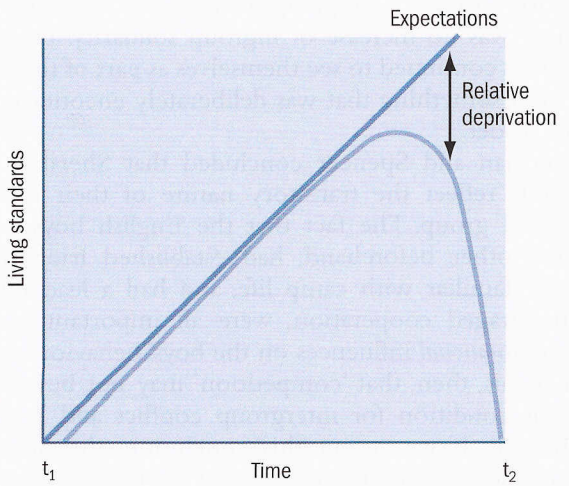
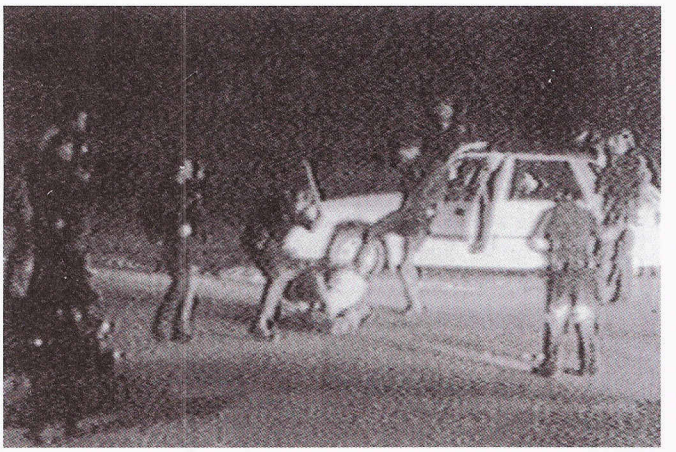


Figure 25.1 The J-curve hypothesis of relative deprivation (based on Davies, 1969)



The 1992 Los Angeles riots were triggered by an all-white jury's acquittal of four Los Angeles police officers accused of beating a black motorist, Rodney King

A good example of such acute relative deprivation is the 1992 Los Angeles riots. The immediate cause was the acquittal, by an all-white jury, of four LA police officers accused of beating a black motorist, Rodney King. Against a background of rising unemployment and continuing disadvantage, the acquittal was seen by blacks as symbolic of their low esteem in the eyes of the white majority (Hogg & Vaughan, 1995). The great sense of injustice at the acquittal seemed to demonstrate in acute form the injustice which is an inherent feature of discrimination – and of relative deprivation.

The LA riots illustrate *fraternalistic relative deprivation,* based on a comparison either with dissimilar others or with other groups (Runciman, 1966). This is contrasted with *egoistic relative deprivation,* which is based on comparison with other similar individuals. Vanneman & Pettigrew (1972) found that whites who expressed the most anti-black attitudes were those who felt most strongly that whites as a group were badly off relative to blacks. Objectively, they were actually better off, showing the subjective nature of relative deprivation. It has also been found that the most militant blacks seem to be those of higher socio-economic and educational status. They probably have higher expectations, both for themselves and for their group, and consequently experience relative deprivation more acutely (Vivian & Brown, 1995).

Realistic group conflict theory (RGCT)

According to Sherif's (1966) *realistic group conflict theory* (RGCT), intergroup conflict arises as a result of a conflict of interests. When two groups want to achieve the same goal but cannot both have it, hostility is produced between them. Indeed, Sherif claims that conflict of interest (or competition) is a *sufficient* condition for the occurrence of hostility or conflict. He bases this claim on the Robber's Cave experiment, which Brown (1986) describes as the most successful field experiment ever conducted on intergroup conflict.

KEY STUDY 25.1 The Robber's Cave experiment (Sherif *et al.*, 1961)

- The setting was Robber's Cave State Park in Oklahoma, where 22 white, middle-class, Protestant, well-adjusted boys spent two weeks at a summer camp. They were randomly assigned to two groups of eleven, each occupying a separate cabin, out of sight of each other. None of the boys knew any of the others prior to their arrival at the camp.

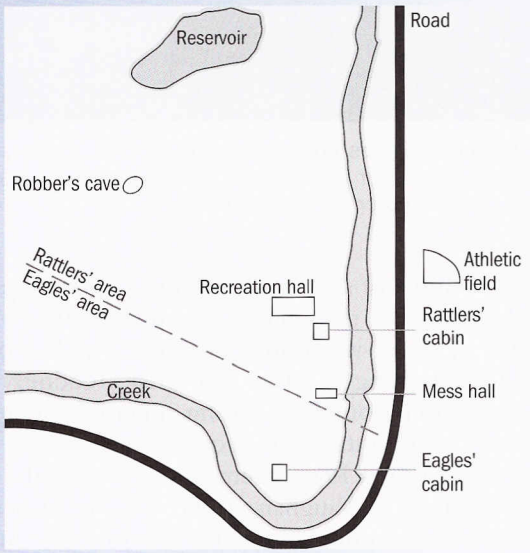


Figure 25.2 A map of Robber's Cave State Park

- During the *first stage* of the experiment, each group cooperated on a number of activities (pitching tents, making meals, a treasure hunt), and soon a distinct set of norms emerged which defined the group's identity. One group called itself 'the Rattlers', and the other 'the Eagles'. Towards the end of the first week, they were allowed to become aware of the other's existence, and an 'us and them' language quickly developed.
- The *second stage* began with the announcement that there was to be a grand tournament between the two groups, comprising ten sporting events, plus points awarded for the state of their cabins and so on. A splendid trophy, medals and four-bladed knives for each of the group members would be awarded to the winning group.
- Before the tournament began, the Rattlers' flag was burned, and the camp counsellors (the experimenters) had to break up a fight between the two groups. With some 'help' from the counsellors, the Eagles won and later the Rattlers stole their medals and knives.
- There was a strong ingroup preference. Rattlers stereotyped all Rattlers as brave, tough and friendly, and (almost) all Eagles as sneaky, stinkers and smart alecks. The reverse was true for the Eagles.

An evaluation of RGCT

- According to Fiske (2004), RGCT is the most obvious explanation for prejudice and discrimination. However, it has received only limited and inconsistent support, and the *perceived, symbolic threat* posed by outgroups matters more than any real or tangible threat. For this reason, the 'realistic' may as well be dropped from its name, and the theory renamed 'perceived group conflict theory'.
- Perceived conflict *does* predict negative attitudes towards outgroups (Brown *et al.*, 2001; Hennessy & West, 1999), and conflict only matters when people identify with their ingroups. More importantly, ingroup identification *by itself* can account for intergroup hostility, even in the absence of competition (Brewer & Brown, 1998). Intangible outcomes (such as group recognition, status, prestige) produce conflict far more often than do tangible resources. Even when the conflict appears to involve resources, often the real pay-off is pride in one's own identification with a group capable of winning them. As Fiske (2004) says:

> ... Group conflict is an inherently social competition that goes beyond concrete self-interest. One result of the struggle for positive identity is bias against the outgroup ...

This is related to *social identity theory* (see below, pages 433–435).

- Tyerman & Spencer (1983) challenged Sherif *et al.*'s conclusions that competition is a sufficient condition for intergroup conflict. They observed English boy scouts at their annual camp. The boys knew each other well before the start of camp, and much of what they did there was similar to what the Rattlers and Eagles did at Robber's Cave. They were divided into four 'patrols', competing in situations familiar to them from previous camps, but the friendship ties which existed prior to arrival at camp were maintained across the patrol groups. Competition remained friendly, and there was no increase of ingroup solidarity. The four groups continued to see themselves as part of the *whole* group, something that was deliberately encouraged by the leader.
- Tyerman and Spencer concluded that Sherif *et al.*'s results reflect the transitory nature of their experimental group. The fact that the English boys knew each other beforehand, had established friendships, were familiar with camp life, and had a leader who encouraged cooperation, were all important *contextual/situational* influences on the boys' behaviour.
- It seems, then, that 'competition' may not be a sufficient condition for intergroup conflict and hostility after all. If we accept this conclusion, the question arises whether it's even a necessary condition. In other words, can hostility arise in the absence of conflicting interests?

The influence of group membership

Minimal groups

According to Tajfel *et al.* (1971), the *mere perception* of another group's existence can produce discrimination. When people are arbitrarily and randomly divided into two groups, knowledge of the other group's existence is a sufficient condition for the development of pro-ingroup and anti-outgroup attitudes. These artificial groups are known as *minimal groups.*

Before any discrimination can occur, people must be categorised as members of an ingroup or an outgroup (making categorisation a *necessary* condition). More significantly, the very act of categorisation produces conflict and discrimination (making it also a *sufficient* condition). These conclusions are based on the creation of artificial groups among 14–15-year-old Bristol schoolboys. The criteria used to create the groups were arbitrary and superficial, and differed from experiment to experiment. They included:

- chronic 'overestimations' or 'underestimations' on a task involving estimating the number of dots appearing on slide projections
- preference for paintings by Klee or Kandinsky
- the toss of a coin.

Box 25.1 The minimal group paradigm (Tajfel *et al.*, 1971)

- Once these arbitrary groups had been formed, each boy worked alone in a cubicle on a task that required various matrices to be studied (see Figure 25.3).
- He had to decide how to allocate points to a member of his own group (but not himself) and a member of the other group. The boys were also told that the points could be converted to money after the study.
- The only information each boy had about another boy was whether he was a member of the same group or the other group; otherwise he was anonymous, unknown, unseen and identified only by a code number.
- The top line in the figure represents the points that can be allocated to the boy's own group, and the bottom line the points to the other group. For example, if 18 points are allocated to the boy's own group, then five are allocated to the other group. If 12 are allocated to the boy's own group, 11 are allocated to the other group, and so on.

MATRIX 4

18	17	16	15	14	13	12	11	10	9	8	7	6	5
5	6	7	8	9	10	11	12	13	14	15	16	17	18

Figure 25.3 One of the matrices used by Tajfel *et al.* (1971)

In the Tajfel *et al.* experiments, the actual group assignments were always made *randomly,* whatever the boys believed to be the basis for the categorisation.

An evaluation of minimal group experiments

- The minimal group experiment must stand as one of the most influential and provocative in the study of intergroup processes (Oakes, 2004).
- Billig & Tajfel (1973) and Locksley *et al.* (1980) went even further than Tajfel *et al.*, by actually telling the participants they were being randomly assigned, tossing the coin in front of them, and giving them obviously meaningless names (such as As and Bs, or Kappas and Phis). Even under these conditions, the groups still showed a strong ingroup preference.
- According to Brown (1988), intergroup discrimination in this minimal group situation has proved to be a remarkably robust phenomenon. In more than two dozen independent studies in several different countries, using a wide range of experimental participants of both sexes (from young children to adults), essentially the same result has been found: the mere act of allocating people into arbitrary social categories is sufficient to elicit biased judgements and discriminatory behaviours.
- Wetherell (1982) maintains that intergroup conflict *isn't* inevitable. She studied white and Polynesian children in New Zealand, and found the latter to be much more generous towards the outgroup, reflecting cultural norms which emphasised cooperation.
- The minimal group paradigm has been criticised on several methodological and theoretical grounds, especially its artificiality and *meaninglessness* (e.g. Schiffman & Wicklund, 1992; Gross, 2003a). Tajfel (1972), however, argues that it's precisely the need to find meaning in an 'otherwise empty situation' (especially for the *self*) that leads participants to act in terms of the minimal categories ('Klee' or 'Kandinsky', etc.). In fact, you can turn the meaninglessness argument on its head and argue that:

> ... the power of minimal categorizations to produce group-based behaviour reflects the customary significance and usefulness of categorical perception which participants import to the laboratory – when a context is defined in social categorical terms *participants expect the categories to mean something* ... (Oakes, 2004)

Social identity theory (SIT)

Tajfel (1978) and Tajfel & Turner (1986) explain the minimal group effect in terms of *social identity theory* (SIT). According to SIT, an individual strives to achieve or maintain a positive self-image. This has two components: *personal identity* (the personal characteristics and attributes which make each person unique), and *social identity* (a sense of who we are, derived from the groups we belong to).

In fact, each of us has several social identities, corresponding to the different groups with which we

identify. In each case, the more positive the image of the group, the more positive will be our own social identity, and hence our self-image. By emphasising the desirability of the ingroup(s) and focusing on those distinctions which enable our own group to come out on top, we help to create for ourselves a satisfactory social identity. This can be seen as lying at the heart of prejudice.

Box 25.2 Group status and self-esteem

- Members of minimal groups in the laboratory (compared with controls who aren't assigned to a group) have been found to show higher self-esteem. For example, Lemyre & Smith (1985) claimed that it was the opportunity to display intergroup discrimination that increased self-esteem. Control participants who were categorised but could only distribute rewards between two ingroupers or two outgroupers, or couldn't distribute rewards at all, showed lower self-esteem than experimental participants able to make intergroup decisions.
- Outside the laboratory, groups with lower social status in a particular society strive to improve their social identities, and thus members' self-esteem. If group members feel its inferior status is unfair or illegitimate, then the group can become very well organised and assertive in trying to change its objective status. Good examples are those working for the Welsh language revival, and the Basque Separatists in Spain.
- Dominant or high status groups typically react very negatively to threats to their privileged position, and this can take the form of extreme prejudices being expressed (Hogg & Abrams, 2000).

Some individuals may be more prone to prejudice because they have an intense need for acceptance by others. Their personal and social identities may be much more interconnected than for those with a lesser need for social acceptance. Prejudice can be seen as an adjustive mechanism which bolsters the self-concept of individuals who have feelings of personal inadequacy – but with potentially undesirable social implications.

Evaluation of SIT

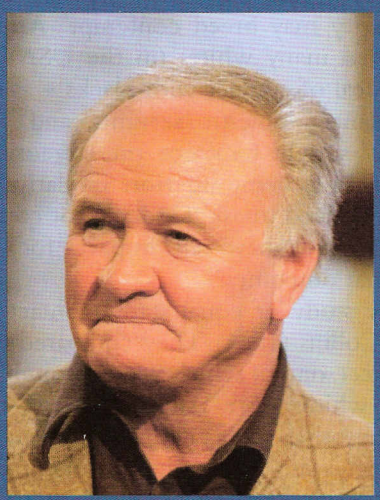
- While there's considerable empirical support for the theory, much of this comes from minimal group experiments. Not only have they been criticised (see above), but SIT was originally proposed to explain the findings from those experiments. So, there's a *circularity* involved, making it necessary to test SIT's predictions in other ways.
- SIT has been criticised on the grounds that it presents racism (and other forms of prejudice) as 'natural', helping to justify it. Stemming from Allport's (1954) claims that stereotypes are 'categories about people' and that 'the human mind must think with the aid of categories' (see Chapter 22), Tajfel (1969; Tajfel *et al.*, 1971) saw the process of *categorisation* as a basic characteristic of human thought. SIT implies that intergroup hostility is natural and built into our thought processes as a consequence of categorisation. If this is correct, then racism (conceived as a form of intergroup hostility or ingroup favouritism) may also be construed as natural. In terms of the distribution of resources, racism is thus justified as the norm ('charity begins at home') (Howitt & Owusu-Bempah, 1994).
- Of course, Tajfel never intended SIT to be seen as a justification of racism. Indeed, he was a life-long opponent of racism, having lost his family and community in the Holocaust. Taken out of context and elevated to the status of a universal human characteristic, SIT is easily *misrepresented* as an explanation and justification of racism (Milner, 1991, in Howitt & Owusu-Bempah, 1994).
- The evidence as it stands shows only a *positive ingroup bias,* and *not* derogatory attitudes or behaviour towards the outgroup, which is what we normally understand by 'prejudice'. In other words, although there's abundant evidence of intergroup discrimination, this appears to stem from raising the evaluation of the ingroup, rather than denigrating the outgroup (Vivian & Brown, 1995). Indeed, SIT suggests that prejudice consists largely of liking 'us' more than disliking 'them': favouring the ingroup is the core phenomenon, *not* outgroup hostility (Brewer, 1999; Hewstone *et al.*, 2002). However, one form that ingroup favouritism can take is 'modern racism'.

Box 25.3 Modern racism and subtle prejudice

- According to Fiske (2004), most estimates put 70–80 per cent of whites as relatively high on *modern/subtle* forms of racism. These are 'cool' and indirect, automatic, unconscious, unintentional, ambiguous and ambivalent. This is in sharp contrast with the crude and blatant racist abuse associated with Allport's 'antilocution' (see above).
- This is sometimes referred to as *symbolic* racism, and Henry & Sears' (2002) *Symbolic Racism Scale* attempts to assess this 'new' form of racism through items such as the following.

1. It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites (1–4: *strongly agree to strongly disagree*).
2. Irish, Italian, Jewish and many other minorities overcame prejudice and worked their way up. Blacks should do the same (1–4: *strongly agree to strongly disagree*).
3. How much of the racial tension that exists in the United States today do you think blacks are responsible for creating? (1–4: *all of it – not much at all*).

- Subtle prejudice isn't a uniquely American, white-on-black phenomenon, however (Pettigrew, 1998; Pettigrew & Meertens, 1995). In Europe, there is French/North Africans, British/South Asians, Germans/Turks.
- Symptomatic of this form of racism (or perhaps a variety of it) is the belief that 'one is not a racist' while simultaneously engaging in racist talk. A classic recent example in the UK involved Ron Atkinson, an eminent ex-football manager and TV football pundit, who was heard to make 'old-fashioned' racist remarks about a black player when he thought his microphone was switched off. In his defence, he claimed, 'What I said was racist – but I'm not a racist. I am an idiot' (in Eboda, 2004). He was sacked from his job.



Ron Atkinson, self-declared non-racist

- Wetherell (1996) believes that SIT emphasises the 'ordinariness' of racism and its continuity with other forms of group behaviour. Intergroup conflict isn't seen as a psychopathology or the result of irrational prejudice, but as a form of behaviour involving complex psychological states which are also central to more positive group actions, such as developing a sense of solidarity with others, group loyalty, cohesiveness and national belonging. Racism is only inevitable given a particular social context, where 'racial' categories become significant and acquire meaning as group divisions. These categories aren't natural, but become powerful as a result of social history (see Critical Discussion 25.2, page 426).

REDUCING PREJUDICE AND DISCRIMINATION

ASK YOURSELF...

- What do the major theories we've discussed above imply about how prejudice and discrimination could be reduced – or prevented?

- The *authoritarian personality theory* implies that by changing the personality structure of the prejudiced individual, the need for an ego-defensive 'prop' such as prejudice is removed. By its nature, this is practically very difficult to achieve, even if it's theoretically possible. Equally difficult is the prevention of the kind of childrearing pattern which, according to Adorno *et al.*, determines the authoritarian personality in the first place.
- According to the *frustration–aggression hypothesis* and the *theory of relative deprivation,* preventing frustration, lowering people's expectations, and providing people with ways to vent their frustration in less antisocial ways than discrimination are all possible solutions. However, this would involve putting the historical clock back, or changing social conditions in quite fundamental ways.
- RGCT makes it very clear that removing competition and replacing it with superordinate goals and cooperation will remove or prevent hostility (this is discussed further below).
- SIT implies that if intergroup stereotypes can become less negative and automatic, and if boundaries between groups can be made more blurred or more flexible, then group memberships may become a less central part of the self-concept, making positive evaluation of the ingroup less inevitable. We shall return to this theme below.

The contact hypothesis

Probably the first formal proposal of a set of social–psychological principles for reducing prejudice was Allport's (1954) *contact hypothesis* (as it's come to be called), according to which:

> Prejudice (unless deeply rooted in the character structure of the individual) may be reduced by equal status contact between majority and minority groups in the pursuit of common goals. The effect is greatly enhanced if this contact is sanctioned by institutional supports (i.e. by law, custom or local atmosphere) and provided it is of a sort that leads to the perception of common interests and common humanity between members of the two groups.

Most programmes aimed at promoting harmonious relations between groups that were previously in conflict have operated according to Allport's 'principles', in particular *equal status contact* and the *pursuit of common (superordinate) goals.*

Equal status contact

When people are segregated, they're likely to experience *autistic hostility,* that is, ignorance of others, which results in a failure to understand the reasons for their actions. Lack of contact means there's no 'reality testing' against which to check our own interpretations of others' behaviour, and this in turn is likely to reinforce *negative stereotypes.* By the same token, ignorance of what 'makes



Francois Pienaar, the South African rugby union captain, receiving the Rugby World Cup from Nelson Mandela in 1995

them tick' will probably make 'them' seem more dissimilar from ourselves than they really are. Bringing people into contact with each other should make them seem more familiar, and at least offers the possibility that this negative cycle can be interrupted and even reversed.

Related to autistic hostility is the *mirror-image phenomenon* (Bronfenbrenner, 1960), whereby enemies come to see themselves as being in the right (with 'God on our side') and the other side as in the wrong. Both sides tend to attribute to each other the same negative characteristics (the 'assumed dissimilarity of beliefs'). Increased contact provides the opportunity to disconfirm our stereotypes. The outgroup loses its strangeness, and group members are more likely to be seen as unique individuals, rather than an 'undifferentiated mass' (see Figure 25.4). This represents a reduction in the *illusion of outgroup homogeneity* (see Chapter 22).

How effective is equal status contact?

It's generally agreed that increased contact alone won't reduce prejudice. Despite evidence that we prefer people who are familiar (see Chapter 28), if this contact is between people who are consistently of *unequal status,* then 'familiarity may breed contempt'. Aronson (1980) points out that many whites (in the USA) have always had a great deal of contact with blacks – as dishwashers, toilet attendants, domestic servants, and so on. Such contacts may simply reinforce the stereotypes held by whites of blacks as being inferior. Similarly, Amir (1994) argues that we need to ask 'Under what conditions does intergroup contact have an impact, for whom, and regarding what outcomes?'

One early study of equal status contact was that of Deutsch & Collins (1951). They compared two kinds of housing project, one of which was thoroughly integrated (blacks and whites were assigned houses regardless of race), and the other segregated. Both casual and neighbourly contact were greater in the integrated housing, with a corresponding decrease in prejudice among whites towards blacks.

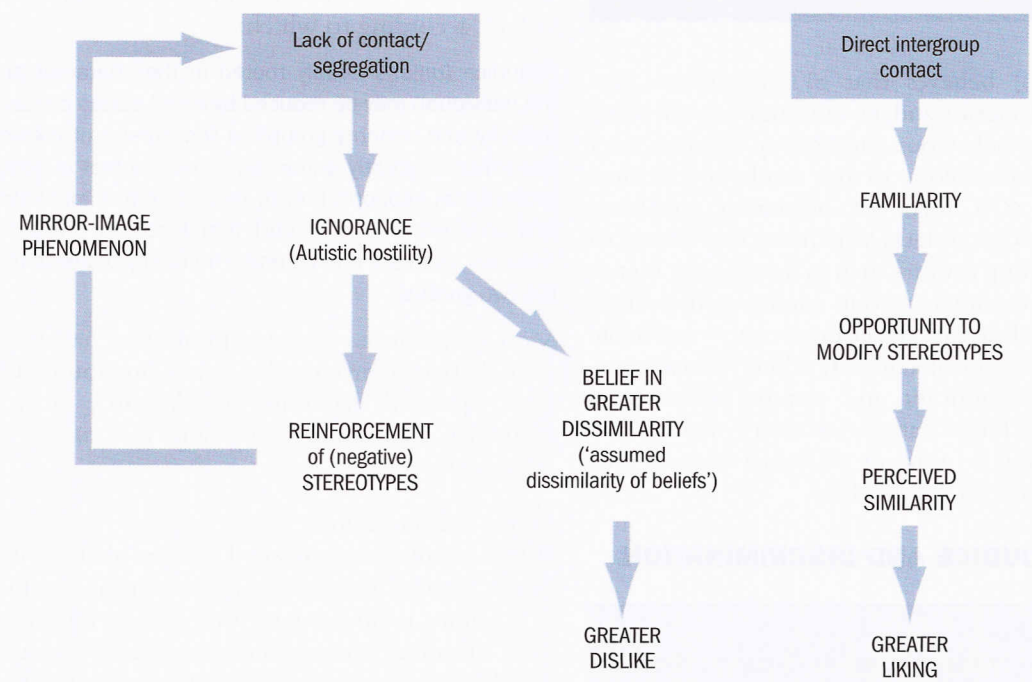


Figure 25.4 Summary of how the negative cycle of lack of contact/segregation between racial/ethnic groups and reinforcement of negative stereotypes can be broken by direct contact (as advocated by Allport's contact hypothesis)

As noted earlier, in Minard's study of miners in West Virginia, black and white miners were (equal status) colleagues in the mine, but the norms operating 'above ground' clearly didn't permit equality of status. Similarly, Stouffer *et al.* (1949) and Amir (1969) found that inter-racial attitudes improved markedly when blacks and whites served together as soldiers in battle and on ships, but relationships weren't so good at base camp.

Stephan (1978) reviewed a number of studies of *desegregation* of American schools, and concluded that white prejudice towards blacks wasn't reduced, while black prejudice towards whites seemed to have increased. Several studies have found that, at first, interaction and friendship are totally governed by group attitudes and then slowly start to take account of personal qualities. But racial attitudes change very little. Aronson (2000) believes that the main reason for this failure was that very few of the studies reviewed by Stephan involved a school situation where all three of Allport's requisites – equal status contact, pursuit of common goals, and sanction by authority – were in place at the same time.

Pursuit of common (superordinate) goals

In a *cooperative* situation, the attainment of one person's goal enhances the chances of attainment of the goals of other group members; this is the reverse of a competitive situation (Brown, 1986).

KEY STUDY 25.2 Robber's Cave revisited (Sherif *et al.*, 1961)

- Sherif *et al.* introduced a *third stage* (see Key Study 25.1), in which seven *equal status contact* situations were created (including filling out questionnaires, seeing movies, and having meals together). None of these, nor all of them in combination, did anything to reduce friction.
- But it was also arranged that the camp's drinking water supply was cut off, and the only way of restoring it was by a *cooperative* effort by the Rattlers and Eagles. In order to afford to hire a movie, both groups had to chip in, and on a trip to Cedar Lake, one of the trucks got stuck and they all had to pull on a rope together to get it started again.
- In the final few days, the group divisions disappeared and they actually suggested travelling home together in one bus. 65 per cent of their friendship choices were now made from the other group, and their stereotypes of the other group became much more favourable.

One influential attempt to realise both mutual cooperation and equal status contact is Aronson *et al.*'s (1978) *jigsaw method*.

Box 25.4 The jigsaw method (Aronson *et al.*, 1978)

- This is a highly structured method of interdependent learning, in which children are assigned to six-person, inter-racial learning groups.
- The day's lesson is divided into six parts, and each member is given material which represents one piece of the lesson to be learned.
- Each child must learn its part, and then communicate it to the rest of the group. At the end of the lesson, the children are tested on the whole lesson and each is given an individual score.
- So, each child is dependent on the others in the group for parts of the lesson that can only be learned from them. Hence, there's complete mutual interdependence.

Evaluation of the jigsaw method

ASK YOURSELF...

- What do you think are some of the benefits of the jigsaw method compared with the conventional classroom?
- How might these benefits contribute to a reduction in prejudice?

The aim of the research programme was to develop and evaluate a classroom atmosphere that could be sustained by the classroom teacher long after the researchers had left. Every student spends some time in the role of expert, and the most important, unique, aspect of this method is that each student has a special, vital gift for the other group members – a gift that's unattainable elsewhere (Aronson, 2000).

The experiment has been replicated in scores of classrooms with thousands of students. According to Aronson (1992, 2000), the jigsaw method consistently enhances students' self-esteem, improves academic performance, increases liking for classmates and improves some inter-racial perceptions, compared with children in traditional classrooms.

However, although the children of different racial/ethnic groups who'd actually worked together came to like each other better as individuals, their reduced prejudice didn't *generalise* to those ethnic groups as a whole. This may be partly accounted for by the fact that most experiments of this type are small-scale and relatively short-term interventions. The jigsaw method also works best with young children, before prejudiced attitudes have an opportunity to become deeply ingrained (Aronson, 1992).

Do common goals always work?

The imposition of superordinate goals may sometimes even increase antagonism towards the outgroup – if the cooperation fails to achieve its aims. Groups need

distinctive and complementary roles to play, so that each group's contributions are clearly defined. When this doesn't happen, liking for the other group may actually *decrease,* perhaps because group members are concerned with the integrity of the ingroup (Brown, 1988).

Maintaining group boundaries (*mutual differentiation:* Fiske, 2004) is essential for promoting generalisation from the particular outgroup members to the whole outgroup (Hewstone, 2003). For example, Harwood *et al.* (2003) found that contact with grandparents was a much better predictor of more positive attitudes towards the elderly in general, when young people reported being aware of age groups during contact.

But isn't there the danger that emphasising group/category boundaries during contact will *reinforce* perceptions of group differences and increase intergroup anxiety (Islam & Hewstone, 1993: see below)? It certainly shouldn't be done in the initial stages of contact, especially when intergroup relationships are very negative. According to Hewstone (2003), the best approach is:

> ... to promote contact that is simultaneously both 'interpersonal' (e.g. involving personal exchange within a close relationship) and 'intergroup' (i.e. both members are still aware that they belong to different groups) ...

An evaluation of the contact hypothesis (CH)

- We noted above that the reduction in prejudice among children who participate in the jigsaw classroom doesn't generalise to those ethnic groups as a whole. This is a crucial criticism of the CH (Hewstone & Brown, 1986). But there's now much greater optimism that positive effects *can* generalise in several ways: across situations, from specific outgroup members to the whole outgroup, from the immediate outgroup to *other* outgroups, and across different types of responses (Gaertner & Dovidio, 2000; Hewstone, 1996; Pettigrew, 1997).
- But contact can also 'work' via more subtle processes than generalisation (Hewstone, 2003). For example, It can help reduce the 'almost automatic fear' caused by interacting with members of outgroups ('intergroup awe': Stephan & Stephan, 1985). Contact has been shown to play a crucial mediating role in reducing anxiety between Hindus and Muslims in Bangladesh, and between Catholics and Protestants in Northern Ireland (Hewstone, 2003). Pettigrew & Tropp (2003) have calculated that anxiety reduction accounts for over 20 per cent of the overall effectiveness of contact in reducing prejudice.
- According to Pettigrew (1998), generating affective (emotional) ties (including anxiety reduction) is the key mechanism involved in contact. Forming close friendships with outgroup members appears to be the most effective in reducing prejudice, and is certainly more effective than the rather superficial contact that occurs in the neighbourhood or at work.
- Pettigrew & Tropp (2003) carried out a meta-analysis ('study of studies') of 561 studies and found a highly significant inverse relationship between contact and prejudice. In other words, the more contact, the less prejudice. Although the results varied between studies, and well-controlled, experimental studies produced larger effects than cross-sectional surveys (the majority), they concluded, emphatically, that 'contact works'.
- The CH doesn't apply only to relationships between members of different ethnic/racial groups. The positive effects of contact have also been shown with attitudes towards psychiatric patients, gay men and disabled children (Hewstone, 2003).

CONCLUSIONS: WHAT TO DO WITH STEREOTYPES?

According to Brislin (1993):

> In many cultures, stereotypes of certain groups are so negative, so pervasive, and have existed for so many generations that they can be considered part of the culture into which children are socialised ...

As we saw in Chapter 22, stereotypes represent a way of simplifying the extraordinarily complex social world we inhabit by placing people into categories. This alone would explain why they're so resistant to change. But they also influence selective attention and selective remembering, processes that are to a large extent outside conscious control. For example, Devine (1989) found that both low- and high-prejudiced people are vulnerable to the automatic activation of the cultural stereotype of African-Americans (see Chapter 22).

However, these automatic stereotyped reactions (like one I'm still 'guilty' of, namely inferring that 'doctor' denotes 'he') can be seen simply as habits that can be broken. Prejudice reduction is a *process* (rather than an all-or-none event), which involves learning to inhibit these automatic reactions and deciding that prejudice is an inappropriate way of relating to others (Devine & Zuwerink, 1994). But trying to suppress your stereotypes may actually *strengthen* their automaticity. Hogg & Abrams (2000) argue that:

> The knack would seem to be to get people to have insight into their stereotypes – to understand them and see through them rather than merely to suppress them ...

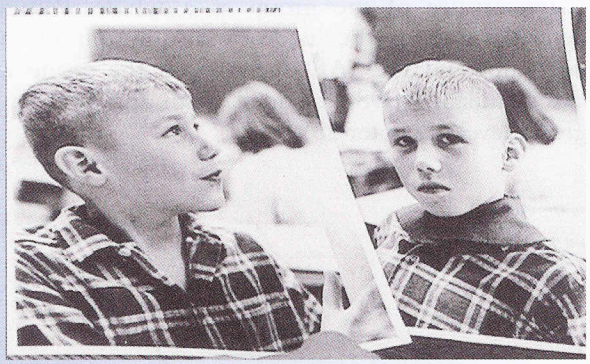
Relying on stereotypes to form impressions of strangers (*category-driven processing*) represents the cognitively easiest, least strenuous, route, while relying on their unique characteristics (*attribute-driven processing*) represents the most strenuous route (Fiske & Neuberg, 1990). While people are very skilled at preserving their stereotypes ('You're OK, it's the others'), the more often they come into contact with members of a particular group who don't fit the stereotype, the more likely it is to lose its credibility. Motivating

individuals in some way to pay careful attention to others, and to focus on their unique attributes rather than their 'group' attributes, can be effective.

Finally, propaganda, education and the raising of consciousness can all contribute to the reduction and prevention of prejudice.

KEY STUDY 25.3 The blue eyes–brown eyes experiment (Elliott, in Aronson & Osherow, 1980)

- Aronson and Osherow reported an experiment with *third-graders* (nine-year-olds) conducted by their teacher, Jane Elliott.
- She told her class one day that brown-eyed people are more intelligent and 'better' people than those with blue eyes. Brown-eyed students, though in the minority, would be the 'ruling class' over the inferior blue-eyed children and be given extra privileges. The blue-eyed students were to be 'kept in their place' by being last in line, seated at the back of the class, and given less break-time. They also had to wear special collars as a sign of their low status.
- Within a short time, the blue-eyed children began to do more poorly in their schoolwork, became depressed and angry, and described themselves more negatively. The brown-eyed group grew mean, oppressing the others and making derogatory comments about them.



Stills from the film of Elliot's classroom experiment, in which wearing collars as an overt sign of low status was part of the discrimination sanctioned by the teacher

- The next day, Elliott announced that she'd made a mistake, and that it was really blue-eyed people who are superior. The pattern of prejudice and discrimination quickly switched from the blue-eyed as victims to the brown-eyed.
- At the end of the experiment, Elliott debriefed the children. She told them its purpose was to provide them with an opportunity to experience the evils of prejudice and discrimination in a protected environment.

In a follow-up study of the students when they were 18, Elliott (1990) found that they reported themselves as being more tolerant of differences between groups and actively opposed to prejudice.

Elliott's experiment (described in her book *The Eye of the Storm,* and featured in the TV programme *A Class Divided*) demonstrates the potential impact of experiencing prejudice and discrimination first-hand. Prejudice is mindless. If we teach people, especially children, to be mindful of others, to think of them as complex, whole individuals, stereotypic reactions could be reduced (Hogg & Vaughan, 1995).

CHAPTER SUMMARY

- As an extreme attitude, **prejudice** comprises **cognitive** (**stereotype**), **affective** (**hostility**) and **behavioural components**. **Discrimination** usually refers to any kind of prejudiced behaviour.
- Most definitions of prejudice identify it as the characteristic of an individual, but it's often associated with **intergroup conflict**. Racism, sexism, heterosexism and ageism can all be regarded as **ideologies**, which are characteristics of society, not individuals.
- The most influential 'individual' theory of prejudice is the **authoritarian personality**. Adorno *et al.* concluded that the authoritarian personality is prejudiced in a **generalised** way.
- This reflects a personality structure that divides the world rigidly into 'us' and 'them', and a punitive, unloving upbringing, from which considerable **repressed hostility** towards the parents is **displaced** and **projected** onto minority groups.
- Methodological problems with these data include **acquiescent response set** and **experimenter bias**. A major theoretical problem is how a theory of individual differences can account for the uniformity of prejudice as found in Nazi Germany.
- Rokeach's theory of **ideological dogmatism** identifies authoritarianism as an extreme way of thinking (the 'closed mind'), rather than a particular political persuasion.
- According to Dollard *et al.*'s **frustration–aggression hypothesis**, frustration-induced aggression is often displaced onto minority groups, which act as **scapegoats**.
- **Relative deprivation theory** claims that we experience frustration when attainments fall short of expectations. **Fraternalistic relative deprivation** will produce intergroup hostility, particularly if there's a sudden shortfall of attainments.
- According to Sherif's realistic group conflict theory (RGCT), **competition** between groups for scarce resources is a sufficient condition for inter-group hostility. This was demonstrated in the Robber's Cave field experiment.
- **Minimal group experiments** demonstrate that intergroup conflict can occur without competition, and that the **mere categorisation** of oneself as

belonging to one group rather than another is sufficient for intergroup discrimination.

- The minimal group effect is explained in terms of Tajfel's **social identity theory** (SIT), according to which we try to increase self-esteem by accentuating the desirability of our ingroup(s). Prejudice can be seen as part of the attempt to boost self-image.
- An important framework for attempts to reduce prejudice is Allport's **contact hypothesis** (CH), which stresses the need for **equal status contact** and the **pursuit of common (superordinate) goals** between members of different ethnic groups.
- Group segregation can produce **autistic hostility** and the related **mirror-image phenomenon**, with the likely reinforcement of negative stereotypes. Unequal status contact can also reinforce stereotypes.
- In **equal status** situations, there needs to be a balance between **mutual group differentiation** (which maintains **intergroup contact**) and **interpersonal contact**.
- Cooperative learning in the classroom has been studied using the **jigsaw method**, which creates **mutual interdependence** between students. Despite its undoubted benefits for individuals and interpersonal relationships, it's unclear whether these generalise to intergroup attitudes.
- There's considerable support for the CH, which doesn't just apply to relationships between ethnic/racial groups but to a wide range of social groups. The key mechanism involved seems to be creating **affective ties**, including the reduction of **intergroup awe**.
- Stereotypes (**category-driven processing**) are very resistant to change, because they often form part of the culture. They can be activated automatically/unconsciously, but may be broken if people are encouraged to focus on the unique characteristics of individuals (**attribute-driven processing**).

Links with other topics/chapters

- Social institutions other than the police that may be guilty of institutional racism include *psychiatry* (Chapter 43) and *psychology* itself (the '-isms' including *sexism* and *heterosexism,* as well as *ethnocentrism* (Chapter 47).
- *Stereotypes* represent the cognitive component of prejudice (Chapter 22).
- The frustration–aggression hypothesis is, of course, relevant to understanding human *aggression* (Chapter 29).
- Explanations of prejudice and discrimination in terms of individual personality (intrapersonal behaviour), rather than interpersonal/intergroup, are *reductionist* (Chapter 49).
- The *ultimate attribution error* (UAE) (Pettigrew, 1979) refers to the belief that the negative behaviours of an outgroup member are caused by immutable, genetic characteristics of the group as a whole. Pettigrew describes this as the 'bedrock assumption of racist doctrine', and the FAE operating at the group level (Moghaddam, 1998) 'blended' with the SSB at the group level (Chapter 23).

Conformity

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26

CONFORMITY AND GROUP INFLUENCE



INTRODUCTION AND OVERVIEW

It's impossible to live amongst other people and not be influenced by them in some way. According to Allport (1968), social psychology as a discipline can be defined as:

> ... an attempt to understand and explain how the thoughts, feelings and behaviours of individuals are influenced by the actual, imagined, or implied presence of others.

Sometimes, other people's attempts to change our thoughts or behaviour are very obvious, as when, for example, a traffic warden tells us not to park our car in a particular place. If we do as we're told and move the car, we're demonstrating *obedience,* which implies that one person (in this example, the traffic warden, an authority figure) has more social power than others (motorists). Obedience is discussed in Chapter 27.

In common with obedience, other forms of *active social influence* involve deliberate attempts by one person to change another's thoughts or behaviour.

ASK YOURSELF...
- Try to identify some other examples of active social influence (see previous chapters in the 'Social' part of this book and the 'Links with other topics/chapters' section at the end of this chapter).

However, on other occasions social influence is less direct and deliberate, and may not involve any explicit requests or demands at all. For example, sometimes the mere presence of other people can influence our behaviour. This can take the form of *inhibiting* our behaviour, as in bystander intervention (see Chapter 30) or social loafing, or *enhancing* it, as in social facilitation (see Chapter 31).

Another form of indirect or passive social influence occurs when your choice of clothes or taste in music is affected by what your friends wear or listen to. This is *conformity*. Your peers (equals) exert pressure on you to behave (and think) in particular ways, a case of the majority influencing the individual (*majority influence*). But majorities can also be influenced by minorities (*minority influence*). Related to conformity are other group processes, such as the *risky shift phenomenon* and *group polarisation*.

Is there anything that these different forms of social influence have in common? According to Turner (1991):

> The key idea in understanding what researchers mean by social influence is the concept of a *social norm*. Influence relates to the processes whereby people agree or disagree about appropriate behaviour, form, maintain or change social norms, and the social conditions that give rise to, and the effects of, such norms ...

Turner defines a social norm as:

> ... a rule, value or standard shared by the members of a social group that prescribes appropriate, expected or desirable attitudes and conduct in matters relevant to the group ...

CONFORMITY

What is conformity?

Conformity has been defined in a number of ways. For Crutchfield (1955), it is 'yielding to group pressure'. Mann (1969) agrees with Crutchfield, but argues that it may take different forms and be based on motives other than group pressure. Zimbardo & Leippe (1991) define conformity as:

> ... a change in belief or behaviour in response to real or imagined group pressure when there is no direct request to comply with the group nor any reason to justify the behaviour change.

ASK YOURSELF...
- What do these definitions have in common?

Group pressure is the common denominator in definitions of conformity, although none of them specifies particular groups with particular beliefs or practices. Pressure is exerted by those groups that are important to the individual at a given time. Such groups may consist of 'significant others', such as family or peers (*membership groups*), or groups whose values a person admires or aspires to, but to which s/he doesn't actually belong (*reference groups*).

Conformity, then, doesn't imply adhering to any particular set of attitudes or values. Instead, it involves yielding to the real or imagined pressures of any group, whether it has majority or minority status (van Avermaet, 1996).

Experimental studies of conformity

A study by Jenness (1932) is sometimes cited as the very first experimental study of conformity, although it's usually discussed in the context of social facilitation (see Chapter 31). Jenness asked individual students to estimate the number of beans in a bottle, and then had them discuss it to arrive at a group estimate. When they were asked individually to make a second estimate, there was a distinct shift towards the group's estimate. Sherif (1935) used a similar procedure in one of the classic conformity experiments.

KEY STUDY 26.1 If the light appears to move, it must be the Sherif (Sherif, 1935)

- Sherif used a visual illusion called the *autokinetic effect*: a stationary spot of light seen in an otherwise dark room appears to move (see Chapter 15).
- He told participants he was going to move the light, and their task was to say how far they thought the light moved.
- They were tested individually at first, being asked to estimate the extent of movement several times. The estimates fluctuated to begin with, but then 'settled down' and became quite consistent. However, there were wide differences between participants.
- They then heard the estimates of two other participants (the group condition). Under these conditions, the estimates of different participants *converged* (they became more *similar*). Thus, a *group norm* developed, which represented the average of the individual estimates.
- Just as different individuals produced different estimates, so did different groups. This happened both under the conditions already described, and also when participants were tested in small groups right from the start.

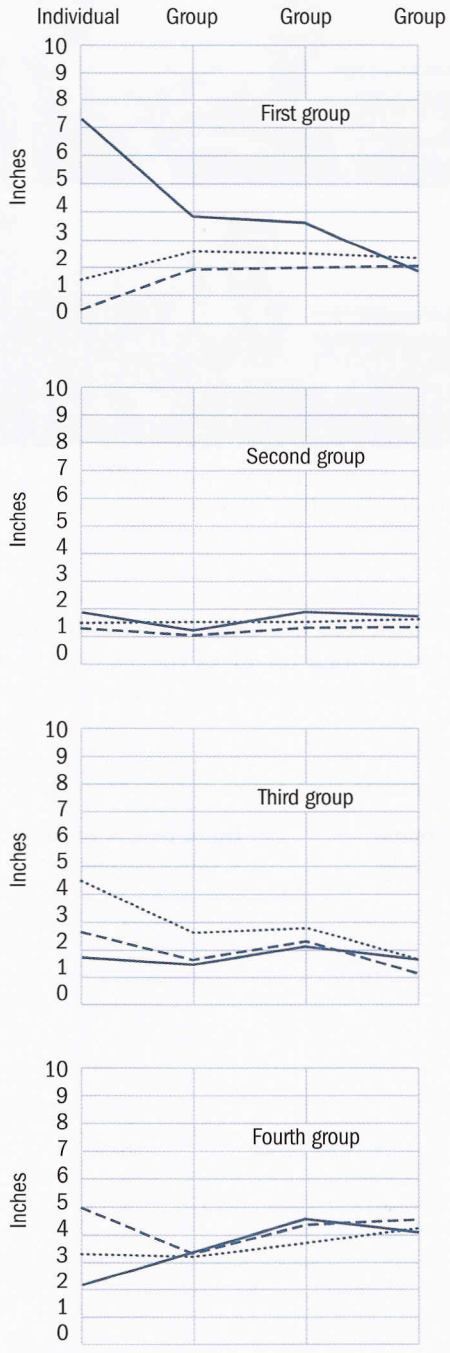


Figure 26.1 Median judgements of the apparent movement of a stationary point of light given by participants in Sherif's (1935) experiment. In the data shown, participants first made their estimates alone ('individual'), and then in groups of three on three occasions ('group'). The figure shows the estimates given by four groups. Sherif also found that when the procedure was reversed, that is, participants made three estimates in groups followed by an estimate alone, the 'individual' estimates did not deviate from one another (from Sherif, 1936)

According to Sherif, participants used others' estimates as a frame of reference in what was an ambiguous situation. Note that:

- participants weren't in any way instructed to agree with the others in the group (unlike the Jenness study), despite initially wide differences between individuals
- when participants were tested again individually, their estimates closely resembled the group norm (rather than their original, individual, estimates).

An evaluation of Sherif's experiment

According to Brown (1996), Sherif's study is one of the classics of social psychology. But it seems to raise questions rather than provide answers.

- In what sense can Sherif's participants be described as a group?
- Can we speak of group norms without any direct interaction taking place or participants seeing themselves as engaged in some kind of joint activity?

In post-experimental interviews, participants all denied being influenced by others' judgements. They also claimed that they struggled to arrive at the 'correct' answers on their own. In other words, they didn't consider themselves part of a group (although there's always doubt about taking participants' reports about the motivation for their behaviour at face value).

While Sherif believed he'd demonstrated conformity, others, notably Asch, disagreed. According to Asch, the fact that the task used by Sherif was *ambiguous* (there was no right or wrong answer) made it difficult to draw any definite conclusions about conformity. Conformity should be measured in terms of the individual's tendency to agree with other group members who unanimously give the *wrong answer* on a task where the solution is obvious or unambiguous. This is a much stricter test of conformity than where there's no correct or incorrect answer to begin with. Asch devised a simple perceptual task that involved participants deciding which of three comparison lines of different lengths matched a standard line.

In a pilot study, Asch tested 36 participants individually on 20 slightly different versions of the task shown in Figure 26.2. They made a total of only three mistakes in the 720 trials (an error rate of 0.42 per cent).

ASK YOURSELF...

- What was the purpose of the pilot study?
- What conclusions do you think Asch drew from its results?

The purpose of the pilot study (which involved participants who weren't to take part in the actual experiment)

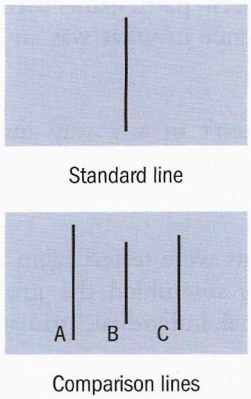


Figure 26.2 Stimulus cards used in Asch's conformity experiments (1951, 1952, 1956)

was to establish that the task really was simple, and the answers obvious and unambiguous. Asch concluded that they were. Because his procedure for studying conformity can be adapted to investigate the effects of different variables on conformity, it's known as the *Asch paradigm*.

Box 26.1 The Asch paradigm

- Some of the participants who'd taken part in the pilot study were asked to act as 'stooges' (or 'confederates: accomplices of the experimenter). The stooges were told they'd be doing the task again, but this time in a group. They were also told that the group would contain one person (a naïve participant) who was completely ignorant that they were stooges.
- On certain *critical* trials, which Asch would indicate by means of a secret signal, all the stooges were required to say out loud the same *wrong answer.* In Asch's original experiment, the stooges (usually seven to nine of them) and the naïve participant were seated either in a straight line or round a table. The situation was rigged so that the naïve participant was always the last or last but one to say the answer out loud.
- On the first two trials (*neutral* trials), all the stooges gave the correct answers. But the next trial was a critical trial (the stooges unanimously gave a wrong answer). This happened a further 11 times (making 12 critical trials in total), with four additional neutral trials (making six in total) between the critical trials.

The important measure in the Asch paradigm is whether the naïve participant conforms, and gives the same wrong answer as the unanimous stooges on the critical trials, or remains independent and gives the obviously correct answer. Asch found a mean conformity rate of 32 per cent; that is, participants agreed with the incorrect majority answer on about one-third of the critical trials.

As shown in Table 26.1, there were also wide individual differences:



A minority of one faces a unanimous majority (Courtesy William Vandivert and *Scientific American*, November 1955)

- no one conformed on all the critical trials, and 13 of the 50 participants (26 per cent) never conformed
- one person conformed on 11 of the 12 critical trials, and about 75 per cent conformed at least once.

Table 26.1 The findings from Asch's original experiment

No of conforming responses made	No of people making those responses
0	13
1	4
2	5
3	6
4	3
5	4
6	1
7	2
8	5
9	3
10	3
11	1
12	0

Given that the task was simple and unambiguous, such findings indicate a high level of conformity. As van Avermaet (1996) has remarked:

> The results reveal the tremendous impact of an 'obviously' incorrect but unanimous majority on the judgements of a lone individual.

How did the naïve participants explain their behaviour?

When interviewed at length following the experiment, participants gave a number of specific reasons for conforming.

- Some wanted to act in accordance with the experimenter's wishes and convey a favourable impression of themselves by not 'upsetting the experiment' (which they believed they would have done by disagreeing with the majority); they thought some obscure 'mistake' had been made.
- A few, who had no reason to believe that there was anything wrong with their eyesight, genuinely doubted the validity of their own judgements by wondering if they were suffering from eye-strain, or if their chairs had been moved so that they couldn't see the cards properly.
- Some denied being aware of having given incorrect answers – they'd unwittingly used the confederates as 'marker posts' (Smith, 1995).
- Others said they wanted to be like everyone else, didn't want to 'appear different', 'be made to look a fool', a 'social outcast' or 'inferior'. So, for these participants there was a discrepancy between the answer they gave in the group and what they *privately believed:* they *knew* the 'wrong' answer was wrong, but went along with it nonetheless. Contrast this with Sherif's participants, for whom there was no conflict between the group's estimate and their own, individual estimates.

Factors affecting conformity

So far, we've described the original, basic experiment. Asch (1952, 1955) subsequently manipulated different variables in order to identify the crucial influences on conformity.

Size of the majority and unanimity

With one naïve participant and just one stooge, conformity was very low (about 3 per cent), ('it's my word against yours'). Where there were two stooges and one participant, conformity increased to 14 per cent, and with three stooges it reached the 32 per cent that Asch originally reported. But beyond three, conformity didn't continue to rise. This suggests that it's the *unanimity* of the majority which is important (the stooges all agree with each other), rather than the actual size of the majority (the number of stooges).

This was demonstrated when one of the stooges (a *dissenter*) agreed with the naïve participant. With one 'supporter', conformity dropped from 32 to 5.5 per cent. Significantly, a dissenter who disagrees with *both* the naïve participant and the majority has almost as much effect on reducing conformity as one who gives the correct answer (that is, agrees with the naïve participant). In both cases, the majority is no longer unanimous. Thus, just breaking the unanimity of the majority is sufficient to reduce conformity (Allen & Levine, 1971). According to Asch (1951):

> ... a unanimous majority of three is, under the given conditions, far more effective than a majority of eight containing one dissenter ...

However, this reduction in conformity only seems to apply to unambiguous stimulus situations (like Asch's perceptual task), and not where opinions are being asked for (Allen & Levine, 1968).

Also, Gerard *et al.* (1968) and Latané & Wolf (1981) claim that adding more stooges *will* increase conformity, although the *rate of increase* falls with each extra majority member. Mann (1969) disagrees with Asch and these later studies, by arguing for a *linear relationship* between group size and conformity: as group size increases, so conformity goes on increasing.

However, adding more members will produce more conformity only if the majority members are perceived as independent judges, and not as sheep following each other or as members of a group who've jointly reached a judgement. According to Hogg & Vaughan (1995), the most robust finding is that conformity reaches its full extent with a three-to-five-person majority, with additional members having little effect.

Fear of ridicule

In the original experiment, it seems that participants were justified in fearing they'd be ridiculed by the rest of the group if they gave the answer they believed to be correct. When a group of 16 naïve participants and a single stooge were tested, the stooge's wrong answers on the critical trials were greeted with sarcasm, exclamations of disbelief, and mocking laughter!

Task difficulty

When Asch made the comparison lines more similar in length (making the task more difficult), participants were more likely to yield to the incorrect majority answer. This was especially true when they felt confident that there was a right answer. When tasks are more ambiguous, in the sense that they involve expressing opinions or stating preferences (there's no objectively correct answer), conformity actually *decreases.*

Giving answers in private

Critics of Asch's experiment have pointed out that participants may conform because they're reluctant or too embarrassed to expose their private views in face-to-face situations (as many of them indicated in post-experimental interviews). If so, the level of conformity should decrease if they're allowed to write their answers down, or where they remain anonymous in some other way. For example, Deutsch & Gerard (1955) used partitions which shielded participants from each other, with responses showing up on a light panel in front of them – the naïve participant had to press one of three buttons. Under these conditions, conformity was lower than in Asch's face-to-face situation. Indeed, when Asch himself allowed the naïve participant to answer in writing (while the stooges still gave their answers publicly), conformity dropped to 12.5 per cent.

Crutchfield (1954) also used a non-face-to-face procedure. He criticised Asch's experiments for being time-consuming and uneconomical, since only one participant could be tested at a time. So, he changed the experimental situation so that several (usually five) naïve participants could be tested at the same time. Altogether, he tested over 600.

Box 26.2 Testing conformity the Crutchfield way – private booths

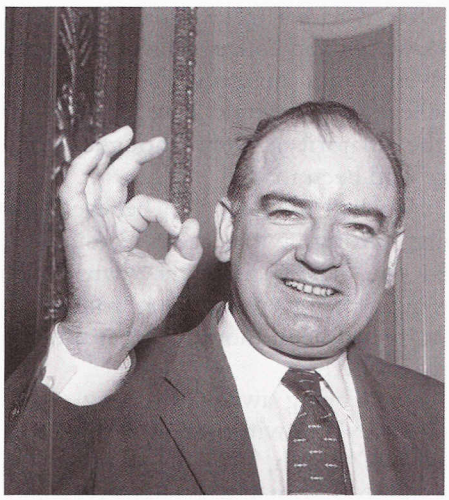
- Each participant sits in an open cubicle which has a panel with an array of lights and switches; neighbouring panels cannot be seen. Questions, pictures and other kinds of stimuli are projected onto the wall, and participants are told that the lights on the display panel indicate the answers of other participants.
- In fact, everyone sees an identical display, and each believes that s/he is the last to respond. The answers are wrong on approximately half the trials.
- Crutchfield presented a variety of tasks and conformity to the wrong answers differed according to the type of task involved.

(i) On the Asch-type perceptual judgement, he found 30 per cent conformity.
(ii) When participants were asked to complete a series of numbers (as in IQ tests), he also found 30 per cent conformity.
(iii) When he presented a star which was obviously smaller in area than a circle (by about one-third), there was 46 per cent agreement that the circle was smaller than the star.
(iv) Some of his participants were army officers attending a three-day assessment programme. 37 per cent of them agreed with the statement 'I doubt whether I would make a good leader' when it was presented in the booth, but significantly, none of them agreed with it when tested without reference to anyone else.
(v) A substantial proportion of college students agreed with statements which, under more 'normal' circumstances, they probably wouldn't have agreed with. For example: 'American males are, on average, taller than American females, by eight or nine inches'; 'the life expectancy of American males is only about 25 years'; 'Americans sleep four to five hours per night, on average, and eat six meals a day'; 'free speech being a privilege rather than a right, it is proper for a society to suspend free speech when it feels itself threatened'.

Replications of Asch's research

Were Asch's findings a reflection of the times?

The Asch studies have stimulated a great deal of research. Larsen (1974) found significantly lower conformity rates than Asch had found among groups of American students, and suggested that this was because of a changed climate of opinion in America in the 1970s towards independence and criticism and away from conformity. However, in a later (1979) study, Larsen *et al.* found results very similar to those of Asch. Perhaps the pendulum had begun to swing back again. Why might this have happened?



Senator Joseph McCarthy (1908–1957)

The early 1950s was the McCarthyism era in America. This is named after the US Senator Joseph McCarthy, who claimed to have unearthed an anti-American Communist plot. This resulted in a witch-hunt of alleged Communist sympathisers, which included academics and Hollywood stars. Under these social and political conditions, high conformity is to be expected (Spencer & Perrin, 1998). By the early 1970s, there was a more liberal climate, but this may have changed again by the late 1970s.

In Britain, Perrin & Spencer (1981) found very low rates of conformity among university students during a period of self-expression and tolerance. As Spencer & Perrin (1998) say, 'The Asch findings are clearly an indicator of the prevailing culture'.

ASK YOURSELF...

- Perrin & Spencer (1981) tested young offenders on probation, with probation officers as stooges.
- How do you think conformity rates with these participants compared with those of Asch?
- Explain your answer.

We might expect the general social and political climate in Britain in the early 1980s to have had a different impact on university students than on young offenders. Additionally, the stooges were adult authority figures, which means that the group wasn't composed of peers (or equals). Not surprisingly, conformity rates were much higher than for the undergraduates and were similar to those reported by Asch.

It's also possible that experimenters exert an influence. As Brown (1985) has noted, experimenters may also have changed over time. Perhaps their expectations of the amount of conformity that will occur in an experiment are unwittingly conveyed to the participants, who respond accordingly (see Chapter 3).

Cross-cultural studies of conformity

As shown in Table 26.2 below, the vast majority of conformity studies using the Asch paradigm have been carried out in Britain and America. However, using a special statistical technique called meta-analysis (see Chapter 45), Bond & Smith (1996) were able to compare the British and American studies with the small number carried out in other parts of the world. After all relevant factors have been taken into account, the studies can be compared in terms of an *averaged effect size,* in this case, the conformity rate.

Table 26.2 Asch conformity studies by national culture (based on Bond & Smith, 1996; taken from Smith & Bond, 1998)

Nation	Number of studies	Averaged effect size
Asch's own US studies	18	1.16
Other US studies	79	0.90
Canada	1	1.37
UK	10	0.81
Belgium	4	0.91
France	2	0.56
Netherlands	1	0.74
Germany	1	0.92
Portugal	1	0.58
Japan	5	1.42
Brazil	3	1.60
Fiji	2	2.48
Hong Kong	1	1.93
Arab samples (Kuwait, Lebanon)	2	1.31
Africa (Zimbabwe, Republic of the Congo [Zaire], Ghana)	3	1.84

ASK YOURSELF...

- Are there any patterns in the conformity rates (averaged effect size) in Table 26.2?
- For example, are those countries with the highest and lowest conformity geographically and/or culturally related?

According to Smith & Bond (1998), the countries represented in Table 26.2 can be described as *individualist* (such as the USA, the UK, and other western European countries) or *collectivist* (such as Japan, Fiji, and the African countries). In individualist cultures, one's identity is defined by personal choices and achievements, while in collectivist cultures it's defined in terms of the collective group one belongs to (such as the family or religious group). As might be expected, the tendency is for more conformity in collectivist cultures (see Box 26.4, page 452).

An evaluation of the Asch paradigm

- According to Fiske (2004), Asch's research could be seen as focusing on a 'stripped-down' form of social influence, without any real interaction – 'Asch's groups weren't very groupy'. This mirrors Brown's criticism of Sherif's experiments (see above).
- He took an individualist view of groups, rather than a more social interactionist view – that is, he focused on participants as individuals within a group as distinct from a group process as such. None of his groups actually interacted, and he concentrated on individual naïve participants' *independence* rather than group members' *interdependence* (Leyens & Corneille, 1999).

Majority or minority influence in Asch-type experiments?

Typically, the findings from experiments using the Asch paradigm have been interpreted as showing the impact of a (powerful) majority on the (vulnerable) individual (who's usually in a minority of one). While the stooges are, numerically, the majority, Asch himself was interested in the social and personal conditions that induce individuals to resist group pressure. (In 1950s' America, this group pressure took the form of McCarthyism: see above.)

Spencer & Perrin (1998) ask if reports of Asch's experiments have overstated the power of the majority to force minority individuals to agree with obviously mistaken judgements. Indeed, Moscovici & Faucheux (1972) argued that it's more useful to think of the naïve participant as the majority (s/he embodies the 'conventional', self-evident 'truth') and the stooges as the minority (they reflect an unorthodox, unconventional, eccentric, and even outrageous viewpoint). This corresponds to the distinction between the ingroup and outgroup respectively: Moscovici wanted to demonstrate the conditions under which people actually conform to the outgroup. In Asch's experiments, this minority/outgroup influenced the majority 32 per cent of the time, and it's those participants remaining independent who are actually the conformists!

Is the majority always right?

Looked at from Moscovici and Faucheux's perspective, Asch-type experiments suggest how new ideas may come to be accepted (they explain *innovation*), rather than providing evidence about maintenance of the *status quo.* If groups always followed a majority decision rule ('the majority is always or probably right, so best go along with it'), or if social influence were about the inevitable conforming to the group, where would innovation come from? (Spencer & Perrin, 1998: see Box 26.3).

According to Moscovici (1976), there's a *conformity bias* in this area of research, such that all social influence is seen as serving the need to adapt to the *status quo* for the sake of uniformity and stability (the 'tyranny of the majority': Martin & Hewstone, 2001; Wood, 2000). However, change is sometimes needed to adapt to changing circumstances, and this is very difficult to explain given the conformity bias. Without *active minorities,* social and scientific innovations would simply never happen (van Avermaet, 1996).

How do minorities exert an influence?

Moscovici (1976b) reanalysed the data from one of Asch's (1955) experiments, in which he varied the proportion of neutral to critical trials. In the original experiment this proportion was 1:2 (see Box 26.1). When the proportion was 1:6, the conformity rate was 50 per cent, but when it was 4:1 it dropped to 26.2 per cent.

ASK YOURSELF...

- Try to account for these findings.
- Why should conformity rate *increase* as the ratio of neutral to critical trials *decreases,* but *decrease* when it *increases?*

Moscovici interpreted these findings in terms of *consistency.* When there were more critical than neutral trials (the ratio *decreases*), the stooges (who embody the *minority* viewpoint) appear *more consistent* as a group, and this produces a higher conformity rate. They're more often agreeing with each other about something unconventional or novel, which makes it more likely they'll change the views of the majority (as represented by the naïve participant).

KEY STUDY 26.2 Green colour slide experiment (Moscovici *et al.*, 1969)

- Moscovici *et al.* used groups of six participants, of whom four were naïve and two were stooges. The stooges played the role of the minority.
- Before the experiment began, participants' colour vision was tested. They all passed. This meant that the naïve participants couldn't explain the stooges' wrong answers by claiming they were colour blind.
- All the participants gave their answers out loud. The stooges sat either in the first and second position, or first and fourth.
- On 36 separate trials, a slide that was clearly blue was presented on a screen. In the *consistent condition*, the stooges called it green *every time*. In the *inconsistent condition*, they answered 'green' 24 times and 'blue' 12 times.
- In the *control condition*, the groups consisted of six naïve participants.
- In the *control condition*, there were fewer than 1 per cent green responses. This showed how obvious the correct response was.
- In the *inconsistent condition*, 1.25 per cent of responses were green. But in the *consistent condition*, green responses were made over 8 per cent of the time. This was significantly more than in the other two conditions; 32 per cent of naïve participants gave at least *one* green response.
- There were really two types of group: one where *nobody* was influenced by the majority, and one where *several* were influenced. Where the stooges sat made no difference.

Moscovici *et al.*'s experiment clearly showed that a consistent minority can affect the judgements made by the majority. Although the minority doesn't have a numerical advantage, their consistent behavioural style makes them influential. In conformity experiments, the influence of the (numerical) majority is evident from the start; but minority influence only begins to show after a while.

However, consistency doesn't necessarily have to involve repeating the same response. Nemeth *et al.* (1974) replicated the Moscovici *et al.* experiment, but added two conditions: the stooges said 'green' on half the trials and 'green-blue' on the other half. In the *random condition,* the green and green-blue responses were randomly distributed across the trials (there was *no consistency* in their responses). In the *correlated condition,* whether they said green or green-blue depended on the *brightness* of the slide (so, there was still a *pattern* to their responses).

Compared to a no-influence *control condition,* the random condition had no effect. But in the correlated condition, almost 21 per cent of the responses were wrong (minority) answers. Where stooges consistently repeated the green response, there was *no* minority influence. In other words, there's more to minority influence than just consistency. It also matters how the majority interprets the minority's answers. They must relate to the stimulus in some predictable way. In Nemeth *et al.*'s study, it was the brightness of the slide that counted.

Minority influence is achieved not so much by a particular style of behaviour in the group, but more by a combination of attributes and behaviour (Smith, 1995). Moscovici (1980) proposes that while majorities impose their views through directly requiring compliance (which often requires 'surveillance'), minorities use more *indirect* means to achieve a more lasting conversion.

Box 26.3 The importance of consistency and other factors in minority influence

According to Hogg & Vaughan (1998), consistency has five main effects.

1. It disrupts the majority norm, producing uncertainty and doubt.
2. It draws attention to itself as an entity.
3. It conveys the existence of an alternative, coherent point of view.
4. It demonstrates certainty and an unshakeable commitment to a particular point of view.
5. It shows that the only solution to the current conflict is the minority viewpoint.

Minorities are more efficient if they:

- are seen to have made significant personal/material sacrifices (*investment*)
- are perceived as acting out of principle rather than ulterior motives (*autonomy*)
- display a balance between being 'dogmatic' (*rigid*) and 'inconsistent' (*flexible*)
- are seen as being *similar* to the majority in terms of age, gender and social category, particularly if they're categorised as part of the ingroup.

ASK YOURSELF...

- Can you relate the importance of consistency to Kelley's covariation model of attribution? (See Chapter 23.)

When minority group members *consistently* adopt a unique (non-majority, unconventional) response (that is, there's *low consensus*), this is likely to lead majority members to make an *internal/dispositional* attribution (they sincerely believe in what they say).

According to Wood *et al.* (1994), minority influence most often occurs *privately* – that is, on measures that protect the converted majority individuals from appearing publicly to abandon their majority position. For the same reason, influence is often *indirect*, emerging on issues merely *related* to the controversial issues or *delayed* beyond the immediate context (Crano, 2000):

> ... Thus, majorities can be converted by minorities, but majority individuals do not admit it to others, and perhaps not to themselves, thereby avoiding public identification with the unpopular minority position ... (Fiske, 2004)

Why do people conform?

Different types of social influence

One very influential and widely accepted account of group influence is Deutsch & Gerard's (1955) distinction between *informational social influence* (ISI) and *normative social influence* (NSI).

Informational social influence (ISI)

Underlying ISI is the need to be right, to have an accurate perception of reality. So when we're uncertain or face an ambiguous situation, we look to others to help us perceive the stimulus situation accurately (or define the situation: see Chapter 30). This involves a *social comparison* with other group members in order to reduce the uncertainty.

As we saw earlier, Sherif's experiment involves an inherently ambiguous situation: there's no actual movement of the light, and so there cannot be any right or wrong answers. Under these conditions, participants were only too willing to validate their own estimates by comparing them with those of others. The results were consistent with Sherif's *social reality hypothesis,* which states that:

> The less one can rely on one's own direct perception and behavioural contact with the physical world, the more susceptible one should be to influence from others ... (Turner, 1991)

According to Festinger's (1954) *social comparison theory,* people have a basic need to evaluate their ideas and attitudes and, in turn, to confirm that they're correct. This can provide a reassuring sense of control over one's world, and a satisfying sense of competence. In novel or ambiguous situations, social reality is defined by what others think and do. Significantly, Sherif's participants were relatively unaware of being influenced by the other judges (see page 443). As Turner (1991) observes:

> They appear to be largely unconsciously adjusting their judgement in the light of others' reports to arrive at a stable, agreed picture of a shared but initially unstructured world.

Normative social influence (NSI)

Underlying NSI is the need to be accepted by other people, and to make a favourable impression on them. We conform in order to gain social approval and avoid rejection – we agree with others because of their power to reward, punish, accept, or reject us.

In Asch's experiment (and to a large extent in Crutchfield's too), most participants weren't unsure about the correct answer. Rather, they were faced with a *conflict* between two sources of information, which in unambiguous situations normally coincide, namely their own judgement and that of others. If they chose their own judgement, they risked rejection and ridicule by the majority. Recall, though, that some participants were unaware of any conflict or of having given an incorrect response.

Internalisation and compliance

Related to ISI and NSI are two kinds of conformity.

1. *Internalisation* occurs when a private belief or opinion becomes consistent with a public belief or opinion. In other words, we say what we believe and believe what

we say. Mann (1969) calls this *true conformity,* and it can be thought of as a *conversion* to other people's points of view, especially in ambiguous situations.

2. *Compliance* occurs when the answers given publicly aren't those that are privately believed (we say what we don't believe and what we believe we don't say). Compliance represents a compromise in situations where people face a conflict between what they privately believe and what others publicly say they believe.

ASK YOURSELF...

- Which kind of conformity was most common in Sherif's and Asch's experiments?
- How are internalisation and compliance related to NSI and ISI?

In Sherif's experiment, participants were *internalising* others' judgements and making them their own. Faced with an ambiguous situation, participants were guided by what others believed to reduce their uncertainty. So, internalisation is related to ISI.

By contrast, most of Asch's participants knew that the majority answers on the critical trials were wrong, but often agreed with them publicly. They were *complying* with the majority to avoid ridicule or rejection. So, compliance is related to NSI.

Do we have to choose between ISI and NSI?

The ISI/NSI distinction has proved very influential. But like all distinctions, it faces the problem of being a *false dichotomy:* are they really separate, opposite forms of influence? A study by Insko *et al.* (1983) suggests that they can operate together.

KEY STUDY 26.3 The compatibility of ISI and NSI (Insko *et al.*, 1983)

- Insko *et al.* had participants, in groups of six, judge whether a colour shown on a slide was more similar to another colour shown to the left or to one shown to the right.
- On critical trials, four stooges who answered before the naïve participant, and another who answered last, gave answers which deviated from those given by most participants in a control condition who were tested alone.
- There were two independent variables:
  1. participants answered either *publicly* or *privately*
  2. the experimenter said that he either was or wasn't able to determine which response was more correct (in the '*determined*' condition, he referred to an apparatus through which he could accurately measure which response was more correct; in the '*undetermined*' condition, he said this was impossible).
- Two hypotheses were tested:
  1. there will be greater conformity in the public than the private condition due to NSI

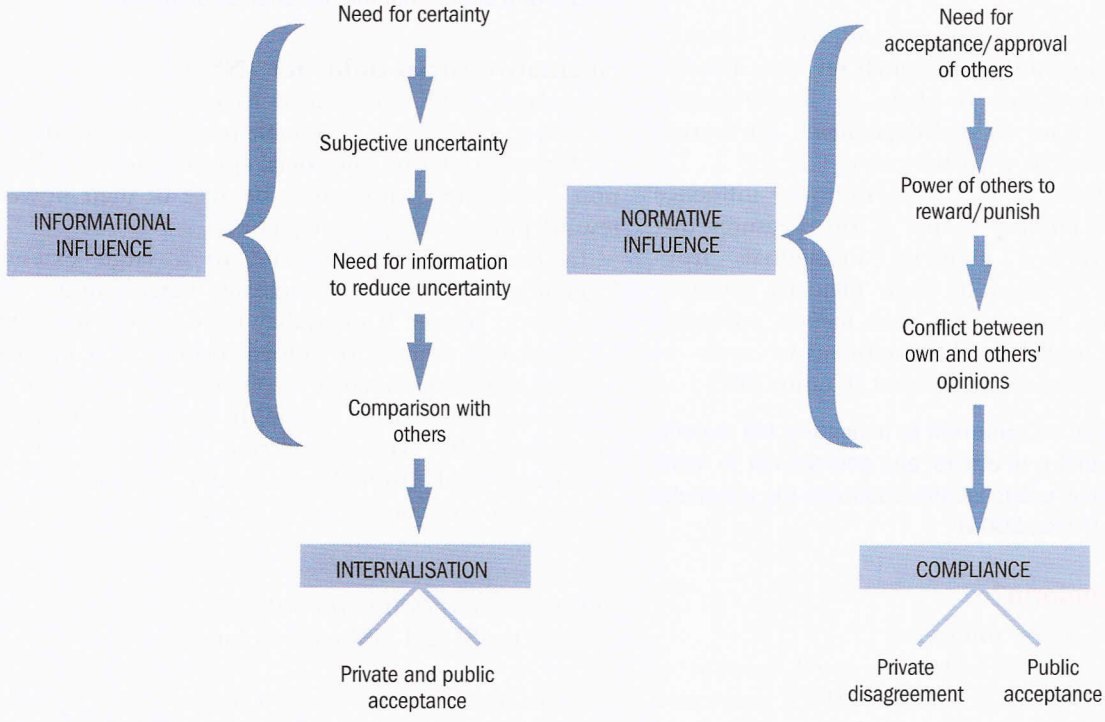


Figure 26.3 The relationship between different kinds of influence and different kinds of conformity

2. there will be greater conformity in the determined than the undetermined condition due to ISI.

- Both hypotheses were confirmed.
- Also, the determined condition produced greater conformity in both private and public conditions, and all four conditions produced greater conformity than the control condition. Hence, even with 'objective stimuli', ISI can add to the effect of NSI (van Avermaet, 1996).

Remember that when Asch made the three comparison lines much more similar – and hence the task more difficult – conformity increased. Clearly, ISI was involved here. If we believe there's a correct answer and are uncertain what it is, it seems quite logical to expect that we'd be more influenced by a unanimous majority. This is why having a supporter, or the presence of a dissenter, has the effect of reducing conformity. By breaking the group consensus, the participant is shown both that disagreement is possible and that the group is fallible. As Turner (1991) puts it:

> ... the more consensual the group and the more isolated the individual (i.e. the less others agree with the deviant), the greater the power of the group to define reality, induce self-doubt in the deviant as to both her competence and social position, and threaten her with ridicule and rejection for being different.

In other words, both ISI and NSI can operate in conjunction with each other, and shouldn't be seen as opposed processes of influence.

Conformity and group belongingness

The distinction between NSI and ISI has been called the *dual process dependency model* of social influence (e.g. Turner, 1991). But this model underestimates the role of group 'belongingness'. One important feature of conformity is that we're influenced by a group because, psychologically, we feel we belong to it. This is why a group's norms are relevant standards for our own attitudes and behaviour. The dual process dependency model emphasises the *interpersonal* aspects of conformity experiments, which could just as easily occur between individuals as group members.

The *self-categorisation approach* suggests that in Sherif's (1935) experiment, for example, participants assumed that the autokinetic effect was real, and expected to agree with each other. In support of this, it's been shown that when participants discover that the autokinetic effect is an illusion, mutual influence and convergence cease – the need to agree at all is removed (Sperling, 1946).

If, however, we believe that there *is* a correct answer, and we're uncertain what it is, then only those whom we categorise as belonging to 'our' group will influence our judgements. As Brown (1988) has remarked:

> There is more to conformity than simply 'defining social reality': it all depends on who is doing the defining.

KEY STUDY 26.4 Knowing what to think by knowing who you are (Abrams *et al.*, 1990)

- Abrams *et al.* replicated Sherif's experiment with psychology students, but manipulated categorisation: stooges were introduced as students at a nearby university, but were either fellow psychology students or students of ancient history.
- Convergence only occurred when others were categorised as being equivalent to self, that is, a member of the ingroup (fellow psychology students). So self-categorisation may set limits on ISI.
- It should also set limits on NSI, since individuals will presumably have a stronger desire to receive rewards, approval and acceptance from those categorised in the same way as themselves than from those categorised differently.
- Using the Asch paradigm but again manipulating categorisation, Abrams *et al.* found that conformity exceeded the usual level of 32 per cent in the ingroup condition, but was greatly below this level in the outgroup condition.

Abrams *et al.* (1990) argue that we experience uncertainty only when we disagree with those with whom we expect to agree. This is especially likely when we regard those others as members of the same category or group as ourselves with respect to judgements made in a shared stimulus situation. Social influence occurs, then, when we see ourselves as belonging to a group, and possessing the same characteristics and reactions as other group members.

Turner (1991) calls this kind of self-categorisation, in which group membership is relevant, *referent social influence*



Scene from *Twelve Angry Men,* starring Henry Fonda as the only dissenter in an (all-male) jury

(RSI). What's important isn't the validation of physical reality or the avoidance of social disapproval, but the upholding of a *group norm:* people are the source of information about the appropriate ingroup norm.

According to Fiske (2004), a social categorisation approach sees the NSI/SIS distinction as (another) false dichotomy (see Key Study 26.3), since 'Information is intrinsically social'.

ASK YOURSELF...

- What do you understand Fiske to mean when she says that 'Information is intrinsically social'? (A look back at Chapter 3 should offer you some clues.)

Conformity: good or bad?

ASK YOURSELF...

- Is conformity always and necessarily desirable, and is failure to conform always and necessarily undesirable?

Sometimes, dissent is just an expression of disagreement, a refusal to 'go along with the crowd' (Maslach *et al.*, 1985). On other occasions, it's more creative or constructive, as when someone suggests a better solution to a problem. A refusal to 'go along with the crowd' may be an attempt to remain independent *as a matter of principle* (what Willis, 1963, calls *anticonformity*), and may betray a basic fear of a loss of personal identity.

According to Zimbardo & Leippe (1991), in most circumstances conformity serves a valuable social purpose in that it:

> ... lubricates the machinery of social interaction [and] enables us to structure our social behaviour and predict the reactions of others.

For most people, though, the word 'conformity' has a negative connotation. As a result, it's implicitly assumed that independence is 'good' and conformity is 'bad', a value judgement made explicit by Asch (1952). However, conformity can be highly functional, helping us to satisfy social and non-social needs, as well as being necessary (at least to a degree) for social life to proceed at all.

Since each of us has a limited (and often biased) store of information on which to make decisions, other people can often provide valuable additional information and expertise. Conforming with others under these circumstances may be a rational judgement. However, while conformity can help preserve harmony:

> There are obvious dangers to conformity. Failure to speak our minds against dangerous trends or attitudes (for example, racism) can easily be interpreted as support ... (Krebs & Blackman, 1988)

Box 26.4 Japan: a straitjacket society?

- The Japanese government is encouraging people to stop being so 'typically' Japanese.
- An advisory panel set up by the conservative prime minister, Keizo Obuchi, advocated that Japan must abandon its obsession with conformity and equality if it is to tackle its growing social problems, such as juvenile crime, suicide, bankruptcy and unemployment.
- This promotion of 'individual empowerment' represents a rejection of many of Japan's core values, but the country is desperate for spontaneity, innovation and ambition.
- In education, for example, the panel calls for action to curb 'the excessive degree of homogeneity and uniformity'. What the panel is recommending is a shift from collectivist to individualist values (see text below).



Almost all Japanese school children aged up to 16 wear dark-blue sailor-style uniforms and follow the same rigid curriculum and textbooks (based on Watts, 2000)

The term conformity is often used to convey undesirable behaviour. In laboratory research, it has most often been studied in terms of the 'conspiratorial group ... [being] shown to limit, constrain, and distort the individual's response' (Milgram, 1965). However, in the context of his famous studies of obedience, Milgram showed that the presence of two defiant peers significantly reduced the obedience rate among naïve participants, and he wrote an article (1965) called 'Liberating effects of group pressure' (see Chapter 27).

Also, whether conformity is considered good or bad is a matter of *culture.* In *individualist* cultures, people are often distressed by the possibility that others can influence their behaviour against their will: they prefer to believe they're in control of their destiny. So 'conformity', 'compliance', 'obedience' and other similar terms have negative connotations. But in *collectivist* cultures, adjusting one's behaviour to fit the requests and expectations of others is highly valued, and sometimes even a moral imperative (Fiske *et al.*, 1998). In these cultures, conformity is seen as necessary for social functioning, rather than a sign of weakness (Nagayama Hall & Barongan, 2002).

Individual differences in conformity

Another way of trying to understand why people conform is to consider whether some people are more likely to conform than others and if so, why.

Crutchfield (1955) found that people who conform tend to be intellectually less effective, have less ego strength, less leadership ability, less mature social relationships, and feelings of inferiority. They also tend to be authoritarian, more submissive, narrow-minded and inhibited, and have relatively little insight into their own personalities compared with those who tend not to conform. However, *consistency across situations* isn't high (McGuire, 1968), and the authoritarian personality (Adorno *et al.*, 1950: see Chapter 25) is perhaps as close to a 'conforming personality type' as can be found.

In general, men conform less than women. This is at least partly because men are traditionally more likely to see dissent or independence as a way of expressing their competence, while women tend to see cooperation and agreement with others as expressing competence (Zimbardo & Leippe, 1991). However, men with personal qualities and interests that are stereotypically 'feminine' conform as much as women with these same qualities and interests. Conversely, women and men with stereotypically 'masculine' qualities and interests conform less (Maslach *et al.*, 1987).

OTHER GROUP PROCESSES

Risky shift

Based on the traditional interpretation of conformity studies as being concerned with majority influence and with how the *status quo* is maintained, the common-sense prediction is that groups, relative to individuals, will be more cautious and conservative. Convergence towards a group mean in Sherif's experiment is a clear demonstration of this prediction. However, Stoner (1961) found the *opposite* to be true. He presented participants with twelve decision dilemmas faced by hypothetical people, and their task was to advise the person about how much risk to take. Initially this was done individually, then in groups of about five.

To everyone's amazement, the group decisions were usually *riskier* than the individuals'. In other words, the group advised the hypothetical person to take a greater risk than the average of the individuals' advice (the *risky shift phenomenon*). Stoner sparked a wave of research into group decision-making, which initially found considerable support for risky shift, involving people of varying ages, occupations and from 12 different countries. However, it was eventually found that risky shift wasn't universal after all. It was possible to present decision dilemmas on which people became *more cautious* after discussion (Myers, 1994). So, is there a general principle that will predict how risky or cautious people's advice will be?

Group polarisation

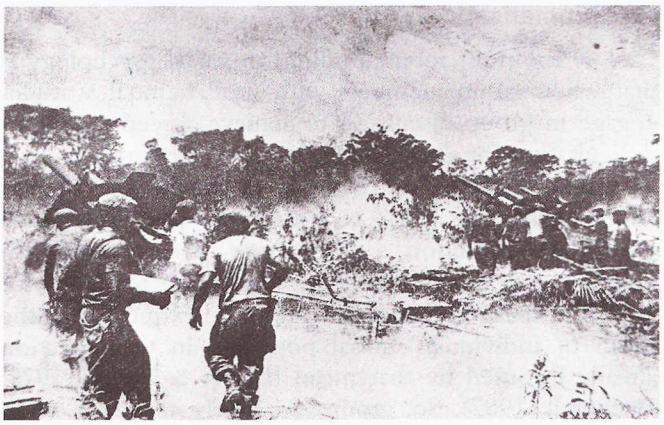
One of the most robust findings in social psychology is that when group members with similar initial attitudes engage in group discussion to achieve agreement about difficult decisions, the discussion *strengthens* the average individual inclinations (Cooper *et al.*, 2004). For this reason, risky shift came to be seen as part of a much wider phenomenon called *group polarisation* (GP) (Moscovici & Zavalloni, 1969). This is the tendency for groups to make decisions that are more extreme than the mean of individuals' initial positions, in the direction already favoured by that mean (Myers & Lamm, 1975; Wetherell, 1987). So, groups are likely to adopt more extreme views than individual members, but this can be in either a riskier or a more cautious direction. Why does it occur?

- According to Brown (1986), the mere *exchange of information* about which members made which decisions can produce GP. In group discussion, group members may point out relevant information that others have missed, exposing individuals to *supportive arguments* they might not previously have thought of. This relates to ISI.
- Group members wish to define their identity more positively and distinctively, in contrast to members of other groups whom they might expect to adopt more average positions (Turner, 1991). This is supported by studies in which groups are told of the presumed decisions of other groups relevant to them (Smith, 1995). This is related to NSI.
- Several studies suggest that *social categorisation processes* also play a significant role in GP. It seems to occur through three steps: (i) categorisation of self as a member of a group (the ingroup); (ii) identification of the prototypical characteristics, behaviours and norms of the ingroup that differentiate it from other (out)groups; and (iii) stereotyping the self as a member of the ingroup (Cooper *et al.*, 2004).

Groupthink

Groupthink (Janis, 1971, 1982) is an example of how group decisions may become very extreme. Groupthink is defined as a mode of thinking in which the desire to reach unanimous agreement overrides the motivation to adopt proper, rational, decision-making procedures. Using archive material (people's retrospective accounts and content analysis), Janis analysed how the decisions were taken that led to certain major political/military fiascos, such as Pearl Harbor (1941), the Bay of Pigs invasion of Cuba (1961) which led to the Cuban Missile Crisis (1962), and the Vietnam War.

It's been suggested that groupthink is merely a specific instance of risky shift, in which a group that already tends towards making risky decisions polarises, through discussion, to an even riskier one (Myers & Lamm,



The American invasion of the Bay of Pigs, Cuba, in 1961

1975). Janis believes that groupthink stems from an excessively cohesive, closeknit group, the suppression of dissent in the interests of group harmony, and a directive leader who signals what decisions s/he favours.

CHAPTER SUMMARY

- **Social influence** can be **active** or **deliberate**, as in persuasive communication and obedience, or **passive** or **non-deliberate**, as in social facilitation and conformity. A common feature of all social influence is the concept of a **social norm**.
- Definitions of **conformity** commonly refer to group pressure, whether the group is a **membership** or a **reference** group.
- In Sherif's experiment using the **autokinetic effect**, individual estimates **converged** to form a group norm. Asch criticised Sherif's use of an ambiguous task, and in his own experiments used a comparison of lines task for which there was a correct answer.
- Asch found that the **unanimity/consensus of the majority** is crucial, not its size. The presence of a **supporter** or **dissenter** reduces conformity, because the majority is no longer unanimous.
- Conformity is increased when the task is made **more difficult** (more **ambiguous**), and reduced when participants give their answer **anonymously**. However, Crutchfield found that conformity rate still differs according to the type of task.
- Replications of Asch's experiment have produced higher or lower rates of conformity according to when and where they were conducted. Both **socio-historical** and **cultural factors** seem to play a part.
- Asch's findings are usually interpreted as showing the impact of **majority influence**. But Moscovici believes that the stooge majority should be thought of as embodying unconventional, minority beliefs, and that conformity experiments show how new ideas come to be accepted (**innovation**).
- One way in which **minority influence** works is by displaying **consistency**, together with **investment**, **autonomy**, and a balance between **rigidity** and **flexibility**.
- Two major **motives for conformity** are the need to be right (**informational social influence**/ISI) and the need to be accepted by others (**normative social influence**/NSI).
- ISI is related to Sherif's **social reality hypothesis** and Festinger's **social comparison theory**, and is demonstrated through **internalisation/true conformity**. NSI is linked to **compliance**.
- ISI and NSI aren't opposed forms of influence, but the **dual process dependency model** tends to emphasise the **interpersonal** aspects of conformity experiments. In contrast, **referent social influence**/RFI stresses the importance of **group membership** and **self-categorisation**.
- Despite evidence of **individual differences** in the tendency to conform, there's unlikely to be a 'conforming personality'.
- While **independence** is often seen as preferable to conformity, conformity also serves an important social function. Milgram has shown how it can have liberating effects in an obedience situation.
- Evidence for the **risky shift phenomenon** is mixed. It has come to be seen as part of **group polarisation**/GP, in which group decisions tend to become more extreme than the mean of individuals' initial positions.
- One demonstration of GP is **groupthink**, which stems from excessively cohesive groups with a directive leader.

Links with other topics/chapters

- Other examples of active social influence apart from *obedience* (Chapter 27) include *impression management* (Chapter 22), *persuasive communication,* and *propaganda and advertising* (Chapter 24).
- *Social loafing* and *social facilitation* are both forms of indirect/passive social influence that are relevant to the *social psychology of sport* (Chapter 31).
- The finding that conformity is generally higher in *collectivist cultures* demonstrates the importance of *cross-cultural research* in general, and the need to counteract *ethnocentrism* and *Eurocentrism* in particular (Chapter 47).
- Self-categorisation and intergroup relationships are crucial for understanding *prejudice and discrimination* (Chapter 25).

Compliance: requesting, selling, and convincing

Distinguishing between conformity and obedience

Experimental studies of obedience

Milgram's research

The participants

The basic procedure

The results

Why do people obey?

Personal responsibility

The perception of legitimate authority

The 'foot in the door' and not knowing how to disobey

Socialisation

An evaluation of Milgram's research

The power of social situations

Zimbardo's research

An evaluation of the prison simulation experiment

Conclusions: How can we resist obedience?

Chapter summary

Links with other topics/chapters

27

OBEDIENCE



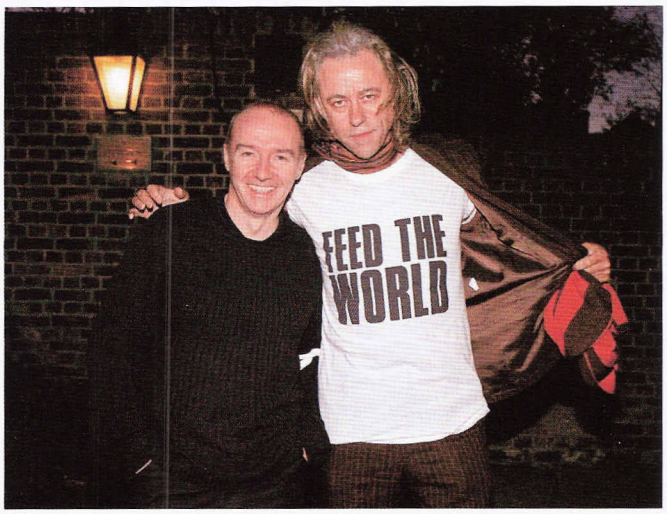
INTRODUCTION AND OVERVIEW

As we saw at the beginning of Chapter 26, obedience is an active or deliberate form of social influence, which involves someone in authority requiring us to behave in a particular way in a particular situation. If we obey, we are said to be *complying* with the authority figure's request or instruction. We also discussed compliance as a major kind of conformity, namely one in which overt behaviour doesn't reflect private beliefs.

Compliance also occurs whenever we do what someone else 'asks' us to do, that is, whenever people make direct requests, such as when a friend asks us for a 'favour' or a salesperson 'invites' us to try a product or service. Many researchers believe that attempts to gain compliance through direct requests is the most common form of social influence (Hogg & Vaughan, 1995).

Cialdini (2004) identifies six basic tendencies of human behaviour that come into play in generating a positive response when one person tries to influence another's attitudes or actions. These are: *reciprocity* (*reciprocation*), *liking, consistency, social validation, authority* and *scarcity*. (We will look at each of these in more detail in the following section.) Most of these are best understood as 'tactics' used by a salesperson trying to sell a product (Cialdini, 1988). *Consistency* was discussed in Chapter 26 in relation to *minority influence,* and *authority* relates directly to *obedience* (see above).

Like the demands of an authority figure, these tactics (some more subtle than others) are active and deliberate attempts to make us behave in particular ways. Unlike both obedience and conformity, there's no obvious 'penalty' to pay for not complying. And as we find in some obedience and conformity situations, the salesperson may be perceived as an expert with access to information (and goods/services) that we need. So, it's clear that these various forms of social influence share many characteristics.



Migde Ure and Bob Geldof at the re-recording of 'Feed the World', 2004

COMPLIANCE: REQUESTING, SELLING, AND CONVINCING

- *The norm of reciprocity:* Giving away a free sample, or a free estimate for a job, or a 'free pen' in charity donation envelopes, may put the potential customer/donor under a sense of obligation. This is based on the social norm that 'we should treat others the way they treat us' (and on the further principle that 'there's no such thing as a free lunch'). Survey researchers have found that attaching a small incentive (financial or otherwise) increases return rate by almost 20 per cent, while a payment dependent on completing the questionnaire *doesn't have the same effect*. It's the unsolicited gift that does the trick (Tourangeau, 2004). This can apply to other relationships too, as in the belief that 'one good turn deserves another'.
- *Liking:* people prefer to say 'yes' to people they like. This can be manipulated through physical attractiveness, agreeing with others and in other ways showing them how we're similar to them, paying them compliments (even flattering them), and cooperating with them ('I'm on your side'). This is sometimes referred to as *ingratiation*. According to Fiske (2004), attractive people:

  > ... sell products, win votes, raise funds, and shorten their jail sentences, all reflecting their success as compliance agents. This builds on the belonging principle of people going along with those they like.

- *Social validation:* requesters can stimulate compliance by demonstrating (or implying) that others 'just like you' have already complied (for example, telling us how many people have already subscribed to X or signed in support of Y). But this can backfire, as in:

  > ... the understandable but potentially misguided tendency of health educators to call attention to a problem by depicting it as regrettably frequent. Information campaigns stress that alcohol and drug abuse are intolerably high, that adolescent suicide rates are alarming and that polluters are spoiling the environment ... (Cialdini, 2004)

  Although the claims are both true and well intentioned:

  > .. Within the statement 'Look at all the people who are doing this *undesirable* thing' lurks the powerful and undercutting message 'Look at all the people who *are* doing this undesirable thing ... (Cialdini, 2004)

  This may produce a boomerang effect.

- *Scarcity:* This relates to people's tendency to value rare/scarce resources. They'll try to obtain items that are going out of stock ('while stocks last') or that are almost out of reach ('once-in-a-lifetime opportunity'). The resources can take the form of information (as in newspaper 'scoops' or exclusives). On the same principle, 'secret' affairs can be more exciting, and 'absence makes the heart grow fonder' (Cialdini, 2004: see Chapter 28).
- The *'foot in the door' tactic* (FITD) (Freedman & Fraser, 1966): Getting someone to agree to a small request makes them more likely to comply with a larger request at some later point, than if the larger request had been made initially. This can be explained partly in terms of people's need to appear *consistent* – to both themselves and others (see Chapter 24). To be effective, the FITD usually requires a delay between the initial small request and the later larger one. If they come too close together, people feel exploited and often refuse. Similarly, people refuse to comply when

the *same* person makes *both* requests (Fiske, 2004). For people to maintain their relationships, they must abide by the *norm of reciprocity* (Cialdini & Trost, 1998: see above).

- According to Hogg & Vaughan (1995), the FITD represents one of three multiple-request tactics, whereby an initial request functions as a set-up for a second (real) request. The other two are:

  (a) the '*door-in-the-face*' tactic (DIF), in which a large, unreasonable request is followed up with a second, much more reasonable request, which is more difficult to refuse. Compliance takes the form of a 'concession', and trades on the requester appearing to 'back off' and the target person feeling guilty and perhaps needing to reciprocate by agreeing to the more moderate request (Fiske, 2004); however it works, it works (O'Keefe & Hale, 2001)

  (b) the '*low-ball*' (LB) tactic – for example, having induced a customer to commit him/herself to a purchase, the salesperson then reveals certain hidden costs that weren't previously mentioned (the term comes from US baseball; in the UK, we might talk of 'moving the goal posts').

ASK YOURSELF...
- Can you identify any of these tactics in your own experience with salespeople?
- Have you possibly employed one or more of them yourself?

DISTINGUISHING BETWEEN CONFORMITY AND OBEDIENCE

ASK YOURSELF...
- Based on what you know about conformity (see Chapter 26), try to identify some of the basic *similarities and differences* between conformity and obedience.

According to Milgram (1992), both conformity and obedience involve the 'abdication of individual judgement in the face of some external social pressure'. However, there are three major *differences* between them.

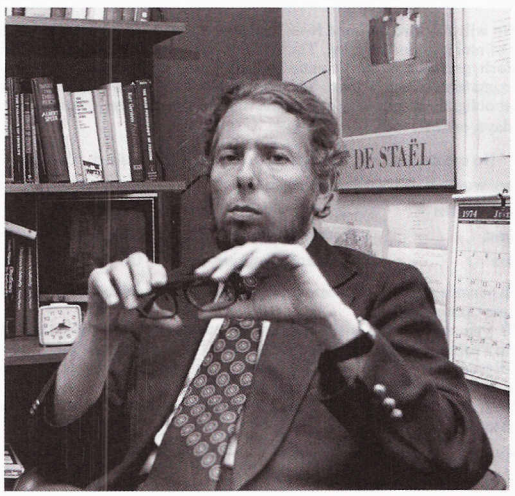
1. In conformity, there's no explicit requirement to act in a certain way, whereas in obedience we're being ordered or instructed to do something.
2. In conformity, those who influence us are our *peers* (*equals*) and people's behaviour becomes more *alike* (*homogenisation of behaviour*). In obedience, there's a *difference in status* from the outset, with the authority figure influencing another person who has inferior power or status: there's no mutual influence.
3. Conformity has to do with the psychological 'need' for acceptance by others, and entails going along with one's peers in a group situation. Obedience has to do with the social power and status of an authority figure in a hierarchical situation. Although we typically deny that we conform (because it seems to detract from our sense of *individuality*), we usually *deny responsibility* for our behaviour in the case of obedience ('He made me do it', or 'I was only doing what I was told').

In addition, Brown (1986) says that conformity behaviour is affected by *example* (from peers or equals), while obedience is affected by *direction* (from somebody in higher authority).

EXPERIMENTAL STUDIES OF OBEDIENCE

In the experiments of Sherif, Asch and Crutchfield (see Chapter 25), participants showed conformity by giving a verbal response of some kind, or pressing buttons representing answers on various tasks. In the most famous and controversial of all obedience experiments, Milgram's participants were required to 'kill' another human being.

Milgram's research



Stanley Milgram (1933–1984)

Milgram was attempting to test 'the "Germans are different" hypothesis'. This has been used by historians to explain the systematic destruction of millions of Jews, Poles, and others by the Nazis during the 1930s and 1940s. It maintains that:

- Hitler couldn't have put his evil plans into operation without the cooperation of thousands of others, and

- the Germans have a basic character defect, namely a readiness to obey authority without question regardless of the acts demanded by the authority figure; it's this readiness to obey that provided Hitler with the cooperation he needed.

It's really the second part of the hypothesis that Milgram was trying to test. After piloting his research in America, he planned to continue it in Germany. But his results showed this was unnecessary.

The participants

The participants in the original (1963) experiment were 20–50-year-old men, from all walks of life. They answered advertisements that came by post or appeared in local newspapers, which asked for volunteers for a study of learning to be conducted at Yale University. It would take about one hour, and there'd be a payment of $4.50.

Public Announcement

WE WILL PAY YOU $4.00 FOR ONE HOUR OF YOUR TIME

Persons Needed for a Study of Memory

*We will pay five hundred New Haven men to help us complete a scientific study of memory and learning. The study is being done at Yale University.

*Each person who participates will be paid $4.00 (plus 50c carfare) for approximately 1 hour's time. We need you for only one hour: there are no further obligations. You may choose the time you would like to come (evenings, weekdays, or weekends).

*No special training, education, or experience is needed. We want:

Factory workers	Businessmen	Construction workers
City employees	Clerks	Salespeople
Laborers	Professional people	White-collar workers
Barbers	Telephone workers	Others

All persons must be between the ages of 20 and 50. High school and college students cannot be used.

*If you meet these qualifications, fill out the coupon below and mail it now to Professor Stanley Milgram, Department of Psychology, Yale University, New Haven. You will be notified later of the specific time and place of the study. We reserve the right to decline any application.

*You will be paid $4.00 (plus 50c carfare) as soon as you arrive at the laboratory.

TO:
PROF. STANLEY MILGRAM, DEPARTMENT OF PSYCHOLOGY, YALE UNIVERSITY, NEW HAVEN, CONN. I want to take part in this study of memory and learning. I am between the ages of 20 and 50. I will be paid $4.00 (plus 50c carfare) if I participate.

NAME (Please Print). . . . . .

ADDRESS . . . . . .

TELEPHONE NO. . . . . Best time to call you . . . . . .

AGE . . . . . OCCUPATION . . . . . SEX . . . . . .
CAN YOU COME:

WEEKDAYS . . . . . EVENINGS . . . . . WEEKENDS . . . . . .

Announcement placed in a local newspaper to recruit participants (from Milgram, 1974)

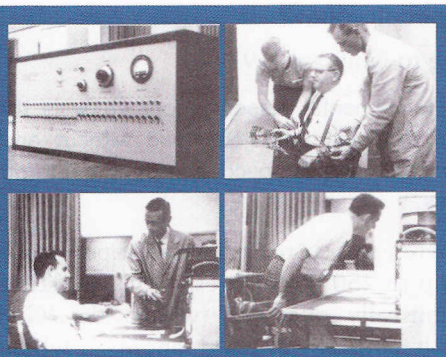
The basic procedure

Box 27.1 The basic procedure used in Milgram's obedience experiment

- When participants arrived at Yale University psychology department, they were met by a young man in a grey laboratory coat, who introduced himself as Jack Williams, the experimenter. Also present was a Mr Wallace, introduced as another participant, in his late fifties, an accountant, a little overweight and generally a very mild and harmless-looking man.
- In fact, Mr Wallace was a stooge, and everything that happened after this was preplanned, staged, and scripted: everything, that is, except the degree to which the real participant obeyed the experimenter's instructions.
- The participant and Mr Wallace were told that the experiment was concerned with the effects of punishment on learning. One of them was to be the teacher and the other the learner. Their roles were determined by each drawing a piece of paper from a hat: both, in fact, had 'teacher' written on them. Mr Wallace drew first and called out 'learner', so, of course, the real participant was always the teacher.
- They all went into an adjoining room, where Mr Wallace was strapped into a chair with his arms attached to electrodes, which would deliver a shock from the shock generator situated in an adjacent room.
- The teacher and experimenter then moved next door, where the generator was situated. The teacher was given a 45-volt shock to convince him/her that it was real, for s/he was to operate the generator during the experiment. However, that was the only real shock that either the teacher or the learner was to receive throughout the entire experiment.
- The generator had a number of switches, each clearly marked with voltage levels and verbal descriptions, starting at 15 volts and going up to 450 in intervals of 15:

15–60	Slight shock
75–120	Moderate shock
135–180	Strong shock
195–240	Very strong shock
255–300	Intense shock
315–360	Intense to extreme shock
375–420	Danger: severe shock
435–450	XXX

- The teacher had to read out a series of word pairs (e.g. 'blue–girl', 'nice–day', 'fat–neck'), and then the first of one pair (the stimulus word) followed by five words, of which one was the original paired response. The learner had to choose the correct response to the stimulus word by pressing one of four switches, which turned on a light on a panel in the generator room. Each time he made a mistake, the teacher had to deliver a shock, and each successive mistake was punished by a shock 15 volts higher than the one before.



1 Shock generator used in the experiments. Fifteen of the 30 switches have already been depressed. 2 Learner is strapped into chair and electrodes are attached to his wrist. Electrode paste is applied by the experimenter. 3 Subject receives sample shock from the generator. 4 Subject breaks off experiment. (Copyright 1965 by Stanley Milgram from the film Obedience, distributed by the Pennsylvania State University, Audio Visual Services.) (From Milgram, 1974)

Milgram had asked 14 psychology students to predict what would happen for 100 participants in this situation. They thought that a few would break off early on, most would stop somewhere in the middle, and a few would continue right up to 450 volts. He also asked 40 psychiatrists, who predicted that, on average, less than one per cent would administer the highest voltage.

These estimates were based on what Milgram called the *remote-victim condition,* which was the first of a series of 18 different experiments, all variations on the same basic theme. In this particular experiment, Mr Wallace was scripted to pound loudly on the wall at 300 volts and, after 315 volts, to stop pounding and give no further answers. In the second experiment (*voice feedback*), teachers heard a tape-recorded series of verbal responses, which they believed were the spontaneous reactions of Mr Wallace to the increasing shock levels.

At 75, 90 and 105 volts, he made a little grunt.

At 120 volts, he shouted to the experimenter that the shocks were becoming painful.

At 135 volts, he made pained groans.

At 150 volts, he cried out, 'Experimenter, get me out of here! I won't be in the experiment any more! I refuse to go on!' This continued with rising intensity until at 180 volts, he shouted, 'I can't stand the pain!'

At 270 volts, he let out an agonised scream. (He continued to insist on being released.)

At 300 volts, he shouted desperately that he would no longer provide answers.

At 315 volts, he let out a violent scream, reaffirming vehemently that he was no longer participating.

After 330 volts, ominous silence!

The teacher was instructed to treat no response as if it were an incorrect response, so the shocks could continue beyond 300 volts. In addition, the experimenter had a script prepared for whenever the teacher refused to continue or showed any resistance or reluctance to do so:

- 'Please continue' or 'Please go on'
- 'The experiment requires that you continue'
- 'It's absolutely essential that you continue'
- 'You have no other choice, you must go on.'

There were also 'special prods' to reassure the participant that s/he wasn't doing the learner any permanent harm: 'Although the shocks may be painful there is no permanent tissue damage, so please go on.'

ASK YOURSELF...

- If you'd been one of Milgram's teacher-participants, how far up the voltage scale would you have continued to punish 'wrong answers'?

The results

In the first (remote-victim) experiment, every teacher shocked up to at least 300 volts, and 65 per cent went all the way up to 450 volts. In the voice-feedback condition, 62.5 per cent of participants went on giving shocks up to 450 volts.

Many displayed great anguish, attacked the experimenter verbally, twitched nervously, or broke out into nervous laughter. Many were observed to:

> ... sweat, stutter, tremble, groan, bite their lips and dig their nails into their flesh. Full-blown, uncontrollable seizures were observed for three subjects. (Milgram, 1974)

Indeed, one experiment had to be stopped because the participant had a violently convulsive seizure.

To determine why the obedience levels were so high, Milgram conducted several variations using the voice-feedback condition as his baseline measure. In all, a further 16 variations were performed.

KEY STUDY 27.1 Some variations on Milgram's basic procedure

Institutional context (variation 10): In interviews following the first experiment, many participants said they continued delivering shocks because the research was being conducted at Yale University, a highly prestigious institution. So, Milgram transferred the experiment to a run-down office in downtown Bridgeport.

Proximity and touch proximity (variations 3 and 4): In the original procedure, the teacher and learner were in adjacent rooms and couldn't see one another. But in variation 3, they were in the same room (about 1.5 ft/46 cm apart), and in variation 4 the teacher was required to force the learner's hand down on to the shock plate.

Remote authority (variation 7): The experimenter left the room (having first given the essential instructions), and gave subsequent instructions by telephone.
Two peers rebel (variation 17): The teacher was paired with two other (stooge) teachers. The stooge teachers read out the list of word-pairs, and informed the learner whether the response was correct. The naïve participant delivered the shocks. At 150 volts, the first stooge refused to continue and moved to another part of the room. At 210 volts, the second stooge did the same. The experimenter ordered the real teacher to continue.
A peer administers the shocks (variation 18): The teacher was paired with another (stooge) teacher and had only to read out the word-pairs (the shock being delivered by the stooge).

ASK YOURSELF...

- For each of the variations described in Key Study 27.1, estimate the rates of total obedience (those participants going all the way up to 450 volts).
- Try to explain why it might have been higher or lower than the 62.5 per cent in the voice-feedback condition.

- In variation 10, the obedience rate was 47.5 per cent. This still very high figure suggests that the institutional context played some part, but wasn't a crucial factor.
- In variation 3, the obedience rate dropped to 40 per cent, and in variation 4 it dropped further to 30 per cent. While it became much more uncomfortable for participants to see – as well as hear – the effects of their obedience, the figures are still very high.
- In variation 7, obedience dropped to 20.5 per cent. Indeed, participants often pretended to deliver a shock or delivered one lower than they were asked to. This suggests that they were trying to compromise between their conscience and the experimenter's instructions. In his absence, it was easier to follow their conscience.
- In variation 17, there was only 10 per cent obedience. Most stopped obeying when the first or second stooge refused to continue. According to Milgram (1965):

The effects of peer rebellion are most impressive in undercutting the experimenter's authority.

In other words, seeing other participants (our peers) disobey shows that it's *possible* to disobey, as well as *how* to disobey. Indeed, some participants said they didn't realise they *could*. This is a demonstration of the effects of *conformity*.

- In variation 18, obedience rose to 92.5 per cent. This shows that it's easier for participants to shift responsibility from themselves to the person who actually 'throws the switch'.

Why do people obey?

According to Milgram (1974):

The most fundamental lesson of our study is that ordinary people simply doing their jobs, and without any particular hostility on their part, can become agents in a terrible destructive process.

Unless there's reason to believe that people who go all the way up to 450 volts are especially sadistic and cruel, or are unusually obedient (which 'the 'Germans are different' hypothesis' claimed about a whole nation), explanations of obedience must look 'outside' the individual participant. In this way, the emphasis is shifted away from personal characteristics to the characteristics of the social situation: most people facing that situation would probably act in a similar (obedient) way. What might some of these situational factors be?

Personal responsibility

Many participants raised the issue of responsibility for any harm to the learner. Although the experimenter didn't always discuss this, when he did say 'I'm responsible for what goes on here', participants showed visible relief. Indeed, when participants are told they're responsible for what happens, obedience is sharply reduced (Hamilton, 1978).

Milgram saw this *diffusion of responsibility* as crucial to understanding the atrocities committed by the Nazis, and Eichmann's defence that he was 'just carrying out orders'. (Eichmann was in charge of the transportation of Jews and others to extermination camps, and was eventually tried in Jerusalem, in 1960). It can also explain the behaviour of William Calley, an American soldier who was court-martialled for the 1968 massacre by troops under his command of several hundred Vietnamese civilians at My Lai.



Eichmann at his trial in Jerusalem, 1960

The perception of legitimate authority

As we mentioned earlier, many participants showed signs of distress and conflict, and so diffusion of responsibility cannot tell the whole story. The conflict seems to be between two opposing sets of demands – the external authority of the experimenter who says 'Shock', and the internal authority of the conscience which says, 'Don't shock'. The point at which conscience triumphs is, of course, where the participant (finally) stops obeying the experimenter, who, in a sense, ceases to be a legitimate authority in the eyes of the participant. 35 per cent in the original experiment reached that point somewhere before 450 volts, and for many, the crucial 'prod' was when the experimenter said, 'You have no other choice, you *must* go on'. They were able to exercise the choice which, of course, they had from the start.

The most common mental adjustment in the obedient participant is to see him/herself as an agent of external authority (the *agentic state*). This represents the opposite of an *autonomous state,* and is what makes it possible for us to function in a *hierarchical* social system. For a group to function as a whole, individuals must give up responsibility and defer to others of higher status in the social hierarchy. Legitimate authority thus replaces a person's own self-regulation (Turner, 1991). In Milgram's (1974) words:

> The essence of obedience consists in the fact that a person comes to view himself as the instrument for carrying out another person's wishes, and he, therefore, no longer regards himself as responsible for his actions. Once this critical shift of viewpoint has occurred in the person, all the essential features of obedience follow.

ASK YOURSELF...

- What was it about Jack Williams, the experimenter, that conveyed to participants that he was 'in charge' in the experimental situation?



One of the many statues of Lenin brought crashing down in Eastern Europe after the collapse of Communism in 1989

Authority figures often possess highly visible symbols of their power or status that make it difficult to refuse their commands. In Milgram's experiments, the experimenter always wore a grey laboratory coat to indicate his position as an authority figure. The impact of such 'visible symbols' was demonstrated by Bickman (1974). When people were told by a stooge wearing a guard's uniform to pick up a paper bag or give a coin to a stranger, obedience was higher (80 per cent) than when the order was given by a stooge in civilian clothes (40 per cent). Similarly, a stooge wearing a firefighting uniform was obeyed more often than a stooge dressed as a civilian, even though the request (to give someone a dime) had nothing to do with the authority role in question (Bushman, 1984). For Milgram (1974):

> A substantial proportion of people do what they are told to do, irrespective of the content of the act and without limitations of conscience, so long as they perceive that the command comes from a legitimate authority.

Another major study that demonstrates the impact of uniforms and other symbols of authority is Zimbardo *et al.*'s (1973) 'prison simulation experiment', which is discussed on pages 464–465.

The 'foot in the door' and not knowing how to disobey

According to Gilbert (1981), Milgram's participants may have been 'sucked in' by the series of graduated demands. These began with the 'harmless' advertisement for volunteers for a study of learning and memory, and ended with the instruction to deliver what appeared to be potentially lethal electric shocks to another person. Having begun the experiment, participants may have found it difficult to remove themselves from it.

ASK YOURSELF...

- If the original advertisement had mentioned electric shocks, do you think there would have been many volunteers?
- In what ways might such volunteers have constituted a more biased sample than those who participated in the actual experiments?

Presumably, fewer volunteers would have come forward. Those who did may well have been more sadistic than Milgram's sample (assuming that they believed they'd be giving the electric shocks).

Socialisation

Despite our expressed ideal of independence, obedience is something we're socialised into from a very early age by significant others (including our parents and teachers). Obedience may be an ingrained habit that's difficult to resist (Brown, 1986).

An evaluation of Milgram's research

In evaluating Milgram's experiments, *ethical issues* are usually more prominent than scientific ones. These are discussed in detail in Chapter 48. However, Milgram asks whether the ethical criticisms are based as much on the nature of the (unexpected) results as on the procedure itself. Aronson (1988) asks if we'd question the ethics if none of the participants had gone beyond the 150-volt level, which is the point at which most people were expected to stop (according to Milgram's students and the 40 psychiatrists he consulted). Aronson manipulated the results experimentally, and found that the higher the percentage going right up to 450 volts, the more harmful the effects of the experiment are judged to be.

Methodological issues

- One criticism is that Milgram's sample was unrepresentative of the American population. However, a total of 636 participants were tested (in the 18 separate experiments as a whole), representing a cross-section of the population of New Haven, thought to be a fairly typical small American town. But Milgram admits that those who went on obeying up to 450 volts were more likely to see the learner as responsible for what happened to him, and not themselves! They seemed to have a stronger *authoritarian character* and a less advanced level of moral development. But as Rosenthal & Rosnow (1966a) and others have found, people who volunteer for experiments are, on the whole, considerably *less* authoritarian than those who don't.
- Only 40 women were included in Milgram's sample (Experiment 8). But they showed a 65 per cent obedience rate, just like their male counterparts.
- According to Orne & Holland (1968), Milgram's experiments lack *experimental realism,* that is, participants might not have believed the experimental set-up they found themselves in, and knew the learner wasn't really being given electric shocks. However, a study by Sheridan & King (1972) seems to exclude this.

KEY STUDY 27.2 Obedience training for puppies (Sheridan & King, 1972)

- Students trained a puppy to learn a discrimination task by punishing it with increasingly severe and real electric shocks whenever it made an error.
- Although the puppy actually received only a small shock, the participants could see it and hear its squeals.
- After a time, an odourless anaesthetic was released into the puppy's cage, causing it to fall asleep.
- Although participants complained about the procedure (and some even cried), they were reminded that the puppy's failure to respond was a punishable error, and that they should continue to give shocks.
- A total of 75 per cent of participants delivered the maximum shock possible.

- Orne and Holland also criticised Milgram's experiments for their lack of *mundane realism,* that is, the results don't extend beyond the particular laboratory setting in which they were collected. They base this claim on the further claim that cues in the experimental setting influenced the participants' perceptions of what was required of them. Obedience, then, might simply have been a response to the *demand characteristics* of the highly unusual experimental setting (see Chapter 3). However, naturalistic studies of obedience dispute this.

KEY STUDY 27.3 A naturalistic study of nurses (Hofling *et al.*, 1966)

- Twenty-two nurses working in various American hospitals received telephone calls from a stooge 'Dr Smith of the psychiatric department', instructing them to give Mr Jones (Dr Smith's patient) 20 mg of a drug called Astrofen.
- Dr Smith said that he was in a desperate hurry, and would sign the drug authorisation form when he came to see the patient in ten minutes' time.
- The label on the box containing the Astrofen (which was actually a harmless sugar pill) clearly stated that the maximum daily dose was 10 mg.
- So, if the nurse obeyed Dr Smith's instructions she'd be exceeding the maximum daily dose. Also, she'd be breaking the rules requiring written authorisation before any drug is given, and that a nurse be absolutely sure that 'Dr Smith' is a genuine doctor.

ASK YOURSELF...

- What do you think you'd have done if you'd been one of the nurses?

- In interviews, 22 graduate nurses who hadn't participated in the actual experiment were presented with the same situation as an issue to discuss; 21 said they wouldn't have given the drug without written authorisation, especially as it exceeded the maximum daily dose.
- A real doctor was posted nearby, unseen by the nurse, and observed what the nurse did following the telephone call. 21 out of the 22 nurses complied without hesitation, and 11 later said they hadn't noticed the dosage discrepancy!

But could the unfamiliarity of Astrofen (a dummy drug, invented for the purposes of the experiment) have influenced the nurses' responses? Also, Hofling *et al.* failed to report what proportion of nurses actually tried to check the instruction with fellow nurses or superiors – they reported only the number of those who (eventually) complied. Rank & Jacobson (1977) repeated the experiment, but with two important changes:

1. they recorded any checking that nurses did
2. they changed the prescription to 30 mg of Valium, with which they were familiar.

Under these conditions, only two out of 18 nurses were prepared to administer the drug without any checking; 10 prepared the drug but then tried to recontact the doctor, pharmacy, or a supervisor; and six tried to check the order before preparing the drug. The limitations of Hofling *et al.*'s experiment, therefore, offer only modest support to Milgram.

◎ A further methodological criticism concerns the *cross-cultural replicability* of Milgram's findings

Table 27.1 Cross-cultural replications of Milgram's obedience experiment (adapted from Smith & Bond, 1998)

Study	Country	Participants	Percentage obedient
Ancona & Pareyson (1968)	Italy	Students	85
Kilham & Mann (1974)	Australia	Male students Female students	40 16
Burley & McGuiness (1977)	UK	Male students	50
Shanab & Yahya (1978)	Jordan	Students	62
Miranda *et al.* (1981)	Spain	Students	over 90
Schurz (1985)	Austria	General population	80
Meeus & Raajimakers (1986)	The Netherlands	General population	92

Unfortunately, it's very difficult to compare these studies because of methodological discrepancies between them (Smith & Bond, 1998). For example, different types of stooges were used (e.g. a 'long-haired student' in Kilham and Mann's study), some of whom may have been perceived as more vulnerable – or more deserving of shocks – than others. In the Meeus and Raajimakers study, the task involved participants having to harass and criticise someone who was completing an important job application.

While Milgram found no gender differences (as noted above), the Australian female students were asked to shock another female (but the learner was always male in Milgram's experiments). Also, with the exception of Jordan (Shanab & Yahya, 1978), all the countries studied have been western industrialised nations, so we should be cautious when concluding that a universal aspect of social behaviour has been identified. But Smith & Bond (1998) observe that:

> In none of the countries studied is obedience to authority the kind of blind process that some interpreters of Milgram's work have implied. Levels of obedience can and do vary greatly, depending on the social contexts that define the meaning of the orders given.

Issues of generalisation

As we noted earlier, Orne & Holland (1968), along with several other researchers, have argued that Milgram's experiments lack mundane realism (or *external* or *ecological validity*). But Milgram (1974) maintains that the process of complying with the demands of an authority figure is essentially the same whether the setting is the artificial one of the psychological laboratory or a naturally occurring one in the outside world. While there are, of course, differences between laboratory studies of obedience and the obedience observed in Nazi Germany:

> Differences in scale, numbers and political context may turn out to be relatively unimportant as long as certain essential features are retained ...

The 'essential features' that Milgram refers to is the *agentic state* (see page 461).

What do Milgram's studies tell us about ourselves?

Perhaps one of the reasons Milgram's research has been so heavily criticised is that it paints an unacceptable picture of human beings. Thus, it's far easier for us to believe that a war criminal like Eichmann was an inhuman monster than that 'ordinary people' can be destructively obedient (what Arendt, 1965, called the *banality of evil*).

Yet atrocities, such as those committed in Rwanda, Kosovo and Sudan, continue to occur. According to Hirsch (1995), many of the greatest crimes against humanity are committed in the name of obedience.

Box 27.2 Genocide

Hirsch (1995) maintains that genocide, a term first used in 1944, tends to occur under conditions created by three social processes:

1. *authorisation* relates to the 'agentic state' – that is, obeying orders because of where they come from
2. *routinisation* refers to massacre becoming a matter of routine, or a mechanical and highly programmed operation
3. *dehumanisation* involves the victims being reduced to something less than human, allowing the perpetrators to suspend their usual moral prohibition on killing.

The ingredients of genocide were personified by Eichmann who, at his trial in 1960, denied ever killing anybody. However, he took great pride in the way he transported millions to their deaths 'with great zeal and meticulous care' (Arendt, 1965).

Social roles provide models of power and powerlessness, as in parent–child, teacher–student, and employer–employee relationships. Rather than asking what makes some people more obedient than others, or how we'd have reacted if we'd been one of Milgram's participants, we could instead ask how we would behave if put into a position of authority ourselves. How easily could we assume the role and use the power that goes with it?

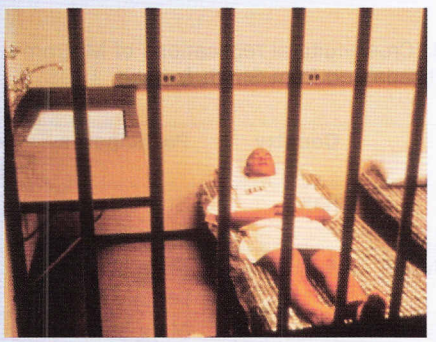
Zimbardo's research

Almost as famous – and controversial – as Milgram's obedience studies is the *prison simulation experiment* (Zimbardo *et al.*, 1973). We mentioned earlier that this experiment illustrates the impact of uniforms and other visible symbols of authority, and for this reason it's usually discussed in relation to obedience. However, it's also relevant to certain aspects of *conformity*, as well as demonstrating the *power of social situations* on people's behaviour.

KEY STUDY 27.4 The prison simulation experiment (Zimbardo *et al.*, 1973)

- Zimbardo *et al.* recruited male participants through newspaper advertisements asking for student volunteers for a two-week study of prison life. From 75 volunteers, 24 were selected. They were judged to be emotionally stable, physically healthy, and 'normal to average' (based on personality tests). They also had no history of psychiatric problems and had never been in trouble with the police.
- Participants were told they'd be randomly assigned to the role of either 'prisoner' or 'prison guard'. At the beginning of the experiment, then, there were no differences between those selected to be prisoners and guards. They constituted a relatively homogeneous group of white, middle-class college students from all over America.
- The basement of the Stanford University psychology department was converted into a 'mock prison'. Zimbardo *et al.* wished to create a prison-like environment which was as *psychologically real* as possible. The aim was to study how prison life impacts upon both prisoners and guards.
- The experiment began one Sunday morning, when those allocated to the prisoner role were unexpectedly arrested by the local police. They were charged with a felony, read their rights, searched, handcuffed, and taken to the police station to be 'booked'. After being fingerprinted, each prisoner was taken blindfold to the basement prison.
- Upon arrival, the prisoners were stripped naked, skin-searched, deloused, and issued with uniforms and bedding. Each prisoner wore a loose-fitting smock with his identification number on the front and back, plus a chain bolted around one ankle. He also wore a nylon stocking to cover his hair (rather than having his head shaved). They were referred to by number only and accommodated in 6 × 9 ft 'cells', three to a cell.
- The guards wore military-style khaki uniforms, silver reflector sunglasses (making eye contact with them impossible), and carried clubs, whistles, handcuffs and keys to the cells and main gate.
- The guards were on duty 24 hours a day, each working eight-hour shifts. They had complete control over the prisoners, who were kept in their cells around the clock, except for meals, toilet privileges, head counts and work.

a



b



a A prisoner in one of the three-bedded cells
b A prison guard asserting his authority over a prisoner

After an initial 'rebellion' had been crushed, the prisoners began to react passively as the guards stepped up their aggression each day (by, for example, having a head count in the middle of the night simply to disrupt the prisoners' sleep). This made the prisoners feel helpless, and no longer in control of their lives.

Social power became the major dimension on which everyone and everything was defined. Every guard at some time or another behaved in an abusive, authoritarian way. Many seemed positively to enjoy the newfound power and the almost total control over the prisoners which went with the uniform.

- Guard A said: 'I was surprised at myself – I made them call each other names and clean the toilets out with their bare hands. I practically considered the prisoners cattle and I kept thinking I have to watch out for them in case they try something.'
- Guard B (preparing for the visitors' first night): 'I made sure I was one of the guards on the yard, because this was my first chance for the type of manipulative power that I really like – being a very noticed figure with complete control over what is said or not.'
- Guard C: 'Acting authoritatively can be fun. Power can be a great pleasure.'

After less than 36 hours, one prisoner had to be released because of uncontrolled crying, fits of rage, disorganised thinking and severe depression. Three others developed the same symptoms, and had to be released on successive days. Another prisoner developed a rash over his whole body, which was triggered when his 'parole' request was rejected. Prisoners became demoralised and apathetic, and even began to refer to themselves and others by their numbers. The whole experiment, planned to run for two weeks, was abandoned after six days because of the pathological reactions of the prisoners.

An evaluation of the prison simulation experiment

- An outside observer, who had a long history of imprisonment, believed that the mock prison, and both the guards' and prisoners' behaviours, were strikingly similar to real prison life. This supports Zimbardo *et al.*'s major conclusion that what make prisons such evil places are prisons themselves – not prisoners or guards. As Zimbardo (1973) says:

> Not that anyone ever doubted the horrors of prison, but rather it had been assumed that it was the predispositions of the guards ('sadistic') and prisoners ('sociopathic') that made prisons such evil places. Our study holds constant and positive the dispositional alternative and reveals the power of social, institutional forces to make good men engage in evil deeds.

ASK YOURSELF...

- What does Zimbardo mean by 'Our study holds constant and positive the dispositional alternative'?

Volunteers were selected for their emotional stability and 'normality', and then randomly allocated to the prisoner/guard roles. Therefore, their different behaviours and reactions couldn't be attributed to their personal characteristics (or dispositions). Rather, the differences could only be explained in terms of the different roles they played in the context of the mock prison.

- But according to Banuazizi & Mohavedi (1975), the behaviour of both guards and prisoners may have arisen from the *stereotyped expectations* of their respective roles. The participants were 'merely' role-playing (based on their prior expectations about how guards and prisoners 'ought' to behave). However, one reply to this criticism is to ask at what point 'mere' role-playing becomes a 'real' experience. As Zimbardo (1971, quoted in Aronson, 1992) says:

> It was no longer apparent to us or most of the subjects where they ended and their roles began. The majority had indeed become 'prisoners' or 'guards', no longer able to clearly differentiate between role-playing and self.

This strongly suggests that their experiences were very real, and that even if they were 'merely' role-playing at the beginning, they were soon taking their roles very seriously indeed! This was 'aided and abetted' by the environmental conditions. A brutalising atmosphere, like the 'mock' prison, produces brutality. Had the roles been reversed, those who suffered as the prisoners may just as easily have inflicted suffering on those who were randomly chosen as guards.

- The study has provoked almost as much controversy regarding its ethics as did Milgram's experiments (see Chapter 48).

KEY STUDY 27.5 *The Experiment* (Reicher & Haslam, 2002)

- *The Experiment* was the BBC's version of Zimbardo *et al.*'s prison study, conducted by Reicher and Haslam in December 2001, and screened in April 2002.
- A newspaper advert appeared under the heading 'Do you really know yourself?', appealing for volunteers to take part in a 'university-backed social science experiment to be shown on TV'. It warned that successful candidates would be exposed to 'exercise, tasks, hardship, hunger, solitude, and anger'. No financial incentive was offered, nor was it implied that involvement would, as in most reality TV shows, be a short-cut to celebrity. Instead, the BBC promised that participation would 'change the way you think' (Brockes, 2001).
- According to Reicher (in Brockes, 2001), the motivation for the study was to ask:

  ... What are the conditions under which people accept oppression or act against it? We want to study how social systems work.

- A studio at Elstree, in Hertfordshire, was converted into a 'social environment', within which the 15 volunteers were randomly allocated to the roles of oppressors and oppressed. They were encouraged, through a system of 'privileges' and 'punishments', to resent each other.
- Reicher plays down the prison analogy. He maintains that it works just as well as an office or a school, where one set of people has power over another. But the creative

director describes it as 'more of a detention centre or a prisoner-of-war camp'.

- The Exeter University Ethics Committee gave it the green light. There was 24-hour monitoring of the participants by a group of independent clinical psychologists, who were given the power to 'pull the plug' on the experiment if they felt the process was damaging the participants. Similarly, an independent ethics panel appointed to monitor the whole experiment was empowered to withdraw participants or stop the experiment if it was judged to be inappropriate.
- *The Experiment*, due to last ten days, was stopped after only nine. The independent psychologists became concerned that the participants' emotional and physical wellbeing was in danger of being compromised (Wells, 2002).
- Nevertheless, Reicher and Haslam were overjoyed with the results, which they feel will prove scientifically important. Far from producing an explosion of aggression, some of the participants felt that 'peacenik' tendencies dominated. According to Haslam, filming stopped a day early because the research had progressed so smoothly and had produced a wealth of data that would take months to process. This *wasn't* an attempt to replicate Zimbardo's study, but to extend his research and look at what drives positive group behaviour. But Haslam admits there were some 'darker sides' to the study (Farrar, 2002).
- According to Reicher and Haslam, the TV programmes were very faithful to the key events in the study, but they could only ever be a 'window' on the science.

CONCLUSIONS: HOW CAN WE RESIST OBEDIENCE?

In 1992, an East German judge sentenced a former East German border guard for having shot a man trying (three years earlier) to escape to the West. The judge's comments echo the spirit of the Nuremberg Accords which followed the Nazi war crimes trials:

> Not everything that is legal is right ... At the end of the twentieth century, no one has the right to turn off his conscience when it comes to killing people on the orders of authorities ... (cited in Berkowitz, 1993)

As we've seen, it's difficult to disobey authority. But we're most likely to rebel when we feel that social pressure is so strong that our freedom is under threat.

Milgram himself felt that obedience would be reduced by:

- educating people about the dangers of blind obedience
- encouraging them to question authority
- exposing them to the actions of disobedient models.

According to Brehm (1966), we need to believe that we have freedom of choice. When we believe that this isn't the case and when we believe we're entitled to freedom, we experience reactance, an unpleasant emotional state. To reduce it, and restore the sense of freedom, we disobey (see Chapter 49).

CHAPTER SUMMARY

- **Compliance** is a factor in different kinds of social influence, including conformity, obedience and our responses to other people's direct requests.
- Attempts to change people's opinions and behaviour used by salespeople and others include **reciprocity**, **liking (ingratiation)**, **scarcity**, **social validation**, **foot-in-the-door** (FITD), **door-in-the-face** (DIF) and **low-ball** (LB) **tactics**.
- While both conformity and obedience involve the **abdication of personal responsibility**, **obedience** involves orders from someone in **higher authority**, with influence being in one direction only.
- Milgram's series of 18 obedience experiments involve a basic procedure (**remote victim/voice feedback**) and variations on this, involving the manipulation of critical variables.
- Increasing the proximity to the victim, reducing the proximity of the experimenter and having the social support of 'rebel' fellow teachers all reduced obedience, while having someone else actually deliver the shock increased it.
- Two related variables that are crucial for understanding obedience are **acceptance/denial of responsibility** and the **agentic state**. The wearing of uniform and other such symbols of authority are also important.
- Milgram's experiments have caused great ethical controversy, but have also been criticised on scientific grounds. The results have been replicated **cross-culturally**, although identical procedures haven't always been used, making it difficult to draw comparisons. But blind obedience hasn't been found anywhere, and social context influences obedience levels.
- The **mundane realism** of the procedure is supported by Hofling *et al.*'s naturalistic experiment involving nurses, and Milgram believes that obedience is essentially the same process regardless of the particular context.
- Many of the greatest crimes against humanity are committed in the name of obedience. **Genocide** tends to occur under conditions of **authorisation**, **routinisation** and **dehumanisation**.
- Zimbardo's **prison simulation experiment**, like Milgram's obedience studies, demonstrates the **power of social situations** to make people act in uncharacteristic ways. A brutalising atmosphere, like a prison, can induce brutality in people who aren't usually brutal.

- Participants were selected for their emotional stability and general 'normality', and then randomly allocated to the roles of prisoner or prison guard. Therefore, their pathological reactions couldn't be attributed to their personal characteristics.
- While they may have been merely **role-playing** at the beginning of the experiment, they soon 'became' prisoners or guards.
- The BBC's ***The Experiment*** wasn't intended as a replication of Zimbardo's prison study, but was more concerned with the differences in **power** between people in any institutional setting (including schools and offices).

Links with other topics/chapters

- Liking as a tactic used to influence people's attitudes or behaviour is related to *interpersonal attraction,* part of the more general topic of *interpersonal relationships* (Chapter 28).
- Liking/ingratiation is a major component of *impression management,* and the norm of reciprocity is a factor influencing *self-disclosure* (Chapter 22).
- When people feel exploited by attempts to change their opinions/behaviour through the FITD, it may be because of *psychological reactance* (Chapter 49).
- Diffusion of responsibility is a factor involved in *helping behaviour/bystander intervention* (Chapter 30).
- Milgram's 'Two peers rebel' experiment demonstrates how obedience and *conformity* are two forms of social influence that can operate together (Chapter 26).
- Both Milgram's and Zimbardo's research highlights the debate regarding the obligation of psychologists to carry out socially meaningful/potentially beneficial research, and at the same time to protect participants from emotional harm – the *double obligation dilemma* (Chapter 48).
- Uniforms and other trappings of power and authority are important aspects of non-verbal 'behaviour', and so are important for understanding *interpersonal perception* (Chapter 22).
- The prison simulation experiment found support for the influence of social situations, rather than individual personality (the *dispositional hypothesis*), in explaining the behaviour of people in prisons (Chapters 23 and 47).

Affiliation: the need for other people
Liking, love and intimacy
Relationships and close relationships
Different types of relationship
Voluntary/involuntary relationships
Arranged marriages
Gay and lesbian relationships
'Electronic' friendships
Liking and loving
Different types of love
The power of love
Is romantic love unique to western culture?
An evolutionary theory of love: love as attachment
Stage theories of relationships
The filter model (Kerckhoff & Davis, 1962)
Stimulus–value–role theory (Murstein, 1976, 1986, 1987)
An evaluation of stage theories
Interpersonal attraction: how relationships get started
Proximity, exposure and familiarity
Proximity
Exposure and familiarity
Similarity
Physical attractiveness
The attractiveness stereotype
What makes someone attractive?
The matching hypothesis
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28

INTERPERSONAL RELATIONSHIPS



INTRODUCTION AND OVERVIEW

According to popular belief, it's love that makes the world go round. But according to Rubin & NcNeil (1983), liking perhaps more than loving is what keeps it spinning. How are liking and loving related? Are there different kinds of love, and can this help us understand how romantic relationships develop over time and why some break down? How do we get into relationships in the first place?

The importance of relationships, both sexual and non-sexual, is 'obvious'. According to Duck (1999):

... We need merely to reflect for a moment on the sources of our greatest pleasure and pain to appreciate that nothing else arouses the extremes of emotion that are experienced in the course of personal relationships with other human beings ...

Relationships make life meaningful, whether they're good or bad. When asked 'What's necessary for your happiness?', most people say, before anything else, satisfying close relationships with friends, family and romantic partners (Berscheid, 1985).

Most relationship research has focused on 'voluntary' relationships. When describing relationships breaking up (or down), we often use language that implies a degree of choice ('Why don't you get out of that relationship?', or 'I wish I'd never got involved in the first place.'). One way of trying to understand the *dissolution* of relationships is to see it as the process of relationship *formation* in reverse.

Traditionally, social psychologists have been interested in *interpersonal attraction* (really an aspect of interpersonal perception: see Chapter 22), which relates to the question 'How do relationships start?' But during the last 20 years or so, the emphasis has shifted to relationships *as a process* (Duck, 1999), reflected in two further questions: 'What makes people stay in relationships (maintenance and progression)?' and 'Why and how do relationships go wrong (breakdown or dissolution)?'

AFFILIATION: THE NEED FOR OTHER PEOPLE

Affiliation is the basic human need for the company of other human beings. The need to belong and to be accepted by others is one of Maslow's basic survival needs (see Chapter 9), and is also a major motive underlying conformity (see Chapter 26). We also saw in Chapter 26 that conformity can be explained in terms of the need to evaluate our beliefs and opinions by comparing them with other people's, especially in ambiguous or unstructured situations. This is the central idea in Festinger's (1954) *social comparison theory.*

According to Duck (1988), we're more 'affiliative' and inclined to seek others' company under certain conditions than others, for example when we're anxious, when we've just left a close relationship (the 'rebound' situation), and when we've moved to a new neighbourhood. One of the most powerful factors influencing affiliation is *anxiety.*

KEY STUDY 28.1 'Anxiety loves anxious company' (Schachter, 1959)

- Female psychology students were led to believe they'd be receiving electric shocks. One group was told the shocks would be painful (*high anxiety condition*), while another group was told they wouldn't be at all painful (*low anxiety condition*).
- They were then told that there'd be a delay while the equipment was set up, and they were given the option of waiting either alone or with another participant (this was the dependent variable and no actual shock was given).
- As predicted, the high anxiety group showed a greater preference for company (20 out of 32) than the low anxiety group (ten out of 30).
- In a separate, related experiment, all the participants were told that the shocks would be painful, but for half the choice was between waiting alone and waiting with another participant in the same experiment, and for the other half it was between waiting alone and waiting with another student who was waiting to see her teacher.
- For the first group, there was a strong preference for waiting with another high-anxiety participant, while the second group preferred to wait alone.

ASK YOURSELF...

- What do these results tell you about the students' motives for affiliation?

Schachter's results strongly suggest that *social comparison* was the motive for affiliation (rather than distraction) – if we have something to worry about, we prefer to be with other worriers.

Kulik & Mahler (1989) reached the same conclusions when studying patients about to undergo coronary bypass surgery. Most preferred to share a room with someone who'd already undergone coronary surgery, rather than another patient waiting for the same operation. The main motive for this preference seemed to be the need for information about the stress-inducing situation.

LIKING, LOVE AND INTIMACY

ASK YOURSELF...

- What is a relationship and what makes a relationship a close one?
- What different kinds of relationship are there?
- How does liking differ from loving?
- Is love just an intense form of liking?
- Are there different types of love?

Relationships and close relationships

According to Berscheid & Ammazzalorso (2004), the concept of a relationship:

... refers to two people whose behaviour is *interdependent* in that a change in behaviour in one is likely to produce a change in behaviour of the other ...

'Close' refers to an interaction pattern in which each partner's behaviour is highly dependent on the other's behaviour. So, a *close* relationship is usually seen as one in which partners are *highly interdependent*. The interaction takes place over a long period of time, the partners' influence on each other is strong and frequent, and many different types of behaviour are affected (Kelley *et al.*, 1983).

In common with other close relationships, *romantic relationships* involve interdependence, strong feelings, committed intent and overlapping self-concept. But unique to romantic relationships are passion and exclusive commitment (Fiske, 2004).

Different types of relationship

Voluntary/involuntary relationships

According to Moghaddam *et al.* (1993), interpersonal relationships in western cultures tend to be *individualistic, voluntary* and *temporary*. Those in non-western cultures are more *collectivist, involuntary* and *permanent*. As they say:

> The cultural values and environmental conditions in North America have led North American social psychologists to be primarily concerned with first-time acquaintances, friendships and intimate relationships, primarily because these appear to be the relationships most relevant to the North American urban cultural experience.

In other words, western psychologists tend to equate 'relationships' with 'western relationships' (a form of *ethnocentrism:* see Chapter 47).

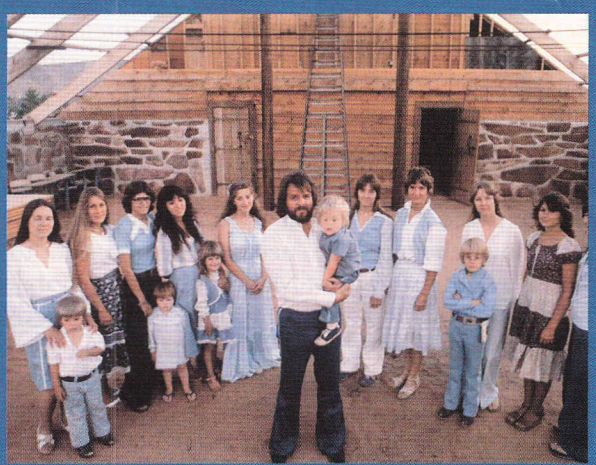
The examples given in the quote from Moghaddam *et al.* are all *voluntary;* but western psychologists have studied a wide range of such relationships during the past 20 years or so, some of which may seem more voluntary than others. Duck (1999) gives the following examples: relationships of blended families, cross-sex non-romantic friendships, romantic or friendly relationships in the workplace, relationships between cooperative neighbours, relationships between prisoners and guards, sibling relationships, children relating to other children, and adults' relationships with their parents.

Marriage is found in all known cultures (Fletcher, 2002) and is usually taken to be a voluntary relationship. But there are several reasons for asking if it really is.

◎ There are wide and important cultural variations in marital arrangements. From a western perspective, the 'natural' form of marriage is *monogamy* (marriage to one spouse at any one time). This belief is enshrined in the law (bigamy is a criminal offence) and reflects basic Judeo-Christian doctrine. But monogamy is only one of the forms that marriage can take.

Box 28.1 Culture and marriage

- *Polygamy* refers to having two or more spouses at once.
- It can take the form of *polygyny* (one man having two or more wives) or (less commonly) *polyandry* (one women with two or more husbands).
- Another arrangement is *mandatory marriage to specific relatives,* as when a son marries the daughter of his father's brother (his first cousin: Triandis, 1994).
- A total of 84 per cent of known cultures allow polygyny, but only 5–10 per cent of men in such cultures actually have more than one wife (Fletcher, 2002).
- Probably fewer than 0.5 per cent of human societies have practised polyandry as a common or preferred form of marriage (Price & Crapo, 1999). However, throughout Tibet and the neighbouring Himalayan areas in India, Nepal and Bhutan, it's been common for generations. Usually, a woman marries two or more brothers (*fraternal polyandry*). This helps to keep family numbers down in order to cope with scarce resources. It also keeps brothers together. Land doesn't need to be divided between the brothers, and a single family is preserved as an economic unit.



Polygyny in Nevada, USA is alive and well!

◎ According to Duck (1999), the *choice to marry* is voluntary, presumably. But once the marriage is a few years old, it's much *less* voluntary than it was, since getting out of it is accompanied by a great deal of 'social and legal baggage':

> ... Thus when we talk about 'voluntary relationships', we need to recognize not only that the exercise of apparently free choice is always tempered by the social realities and constraints that surround us, but also that, once exercised, some choices are then disabled, and cannot be easily or straightforwardly remade. To that extent, therefore, their consequences become non-voluntary ... (Duck, 1999)

- According to Kerckhoff & Davis's (1962) *filter model* (see below, page 477), our choice of potential (realistic) marriage partners is limited by *demographic variables* (age, education, ethnic and religious background, and so on). To this extent, most relationships are 'arranged'. As Duck (1999) says:

  > Many of us would perhaps not recognize – or accept – that marriages are actually 'arranged' by religion, social position, wealth, class, opportunity and other things over which we have little control, even within our own culture ...

- Conversely, parentally arranged marriages in some cultures are gladly entered into, and are considered perfectly normal, natural relationships that are anticipated with pleasure (Duck, 1999).

Arranged marriages

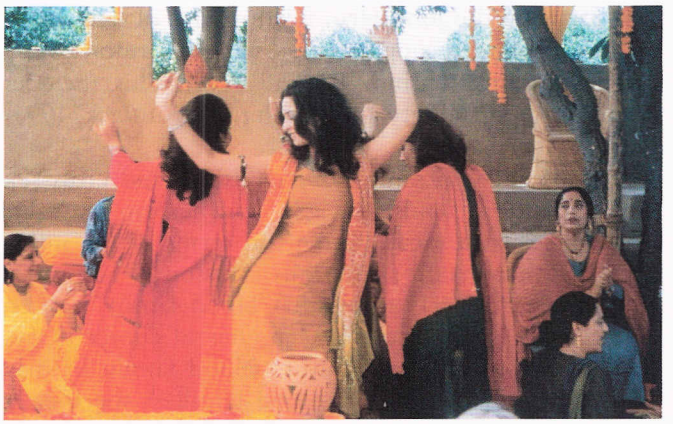
ASK YOURSELF...

- Do you consider that arranged marriages are necessarily wrong or undesirable?
- Do you come from a cultural background in which they are the norm?
- Is there a sense in which all marriages are 'arranged'?

Gupta & Singh (1982) found that couples in Jaipur, India, who married for love reported *diminished* feelings of love if they'd been married for more than five years. By contrast, those who'd undertaken arranged marriages reported *more* love if they weren't newlyweds. These findings reveal that passionate love 'cools' over time, and that there's scope for love to flourish within an arranged marriage.

In cultures where arranged marriages occur, courtship is accepted to a certain degree, but love is left to be defined and discovered *after* marriage (Bellur, 1995). This, of course, is the reverse of the 'Hollywood' picture, where love is supposed to *precede* marriage and be what marriage is all about (see Box 28.5, page 475). But even in traditional cultures that practise arranged marriages, brides (and grooms) are typically given some choice in the matter (Fletcher, 2002). For example, in Sri Lanka men and women who like one another (or fall in love) usually let their parents know their choices in advance through indirect channels (de Munck, 1998). Families often use similar criteria that the individuals themselves might use if they had a free choice (including matching on attractiveness: see below). The classic example is the Jewish custom of having a *matchmaker* arrange a suitable match (Rockman, 1994).

Arranged marriages are far more common in *collectivist* (mainly non-western) *cultures,* where the whole extended family 'marries' the other extended family ('social networks motivate marriages': Fiske, 2004). For example, almost 25 per cent of marriages in Japan are arranged



A scene from *Monsoon Wedding* (2002)

(Iwao, 1993). This contrasts with *individualist* (mainly western) *cultures,* in which the individuals marry one another (Triandis, 1994). Here, it's presumed that marriage is motivated by romantic love between two mutually attracted individuals, who freely choose to commit (Fiske, 2004).

In general, *divorce rates* among those who marry according to parents' wishes are much *lower* than among those who marry for love. This is an argument in favour of arranged marriages. Indeed, it's difficult to argue for the superiority of western (especially American) marital arrangements given the 50 per cent divorce rate and an average marriage that lasts for just seven years (Fiske, 2004). As Triandis (1994) argues:

> Marriage, when seen as a fifty-year relationship, is more likely to be a good one if people enter it after careful, rational analysis, which is more likely to be provided by older adults than by sexually aroused young people ...

Traditional forms of matchmaking are, however, on the wane in most cultures, reflecting the growing western influence, and divorce rates among 'arranged couples' are rising. Personal freedom is gaining in importance, and traditional structures that define set roles for family members are becoming less valid. Among the more liberal-minded Asians living in the West, arranged marriages operate more like a dating facility ('arranged meetings' rather than 'arranged marriages'). The transition from meeting to marrying occurs when both parties formally agree to the commitment.

Gay and lesbian relationships

ASK YOURSELF...

- Do you believe that the differences between gays and lesbians, and heterosexuals, are greater than the similarities?
- What are the major differences and similarities?
- What is your belief based on?

The focus on the long-term relationships of heterosexuals has now been supplemented with discussion of gay and lesbian relationships (Duck, 1999). This includes studies of their stability and dissolution (Kurdeck, 1991, 1992).

Compared with same-sex friendships and cross-sex non-romantic friendships, gay and lesbian partners experience extra social burdens in terms of the influence of other people's reactions (Huston & Schwartz, 1995). Weston (1991) argues that 'blood-family' is often replaced for homosexuals by 'families of choice'. Gays and lesbians often aren't 'out' to blood-family, or may be estranged from their blood-families specifically because of their homosexuality. As a result, the blood-family can function very differently for gays and lesbians compared with heterosexuals. Not only are they less likely to tell their parents and siblings of 'new' relationships; they're less likely to talk about intimate relationships that have already developed (Huston & Schwartz, 1995).

According to Kitzinger & Coyle (1995), psychological research into homosexuality since the mid-1970s has moved away from a 'pathology model' towards one comprising four overlapping themes:

1 rejection of the concept of homosexuality as a central organising principle of the personality in favour of recognising the diversity and variety of homosexuals as individuals
2 an assertion that homosexuality is as natural, normal and healthy as heterosexuality
3 denial of the idea that homosexuals pose any threat to children, the nuclear family or the future of society as we know it.

According to Bee (1994), homosexual partnerships are far more like heterosexual ones than they are different. In terms of sexual behaviour, apart from their sexual preferences, gays and lesbians don't look massively different from their heterosexual counterparts (Fletcher, 2002). Researchers have repeatedly found that many of the same gender differences between heterosexual men and women occur when comparing gays and lesbians. For example, straight men and gays have higher sex drives than straight women and lesbians, and females (straight or lesbian) are more relationship-focused than males (straight or gay). In other words:

> ... many central patterns of sexual attitudes and behaviour are more closely linked to gender than to sexual orientation. If one wants to understand gays and lesbians, a good place to start is by looking at heterosexual men and women respectively ... (Fletcher, 2002)

But Kitzinger and Coyle argue that certain factors are omitted or distorted when homosexual relationships are assessed in terms derived from heterosexual relationships.



Does this couple conform to the stereotype of how gays are supposed to look?

Box 28.2 Some key differences between homosexual and heterosexual relationships (Kitzinger & Coyle, 1995)

- *Cohabitation* (living together) is much less common for homosexuals than heterosexuals.
- *Sexual exclusivity* (having only one sexual partner at a time) is *less* common in lesbian relationships and *much less* common in gay relationships (Peplau, 1982). However, the ideal of sexual exclusivity is based on an assumed heterosexual norm or 'blueprint' (Yip, 1999), which many gays and lesbians reject. Sexual infidelity may cause heterosexual couples to break up, largely because it's 'secretive'. But homosexual couples are more likely to have open relationships, and so are 'less likely to experience their own, or their partners' sexual affairs as signalling the end of the couple relationship' (Kitzinger & Coyle, 1995).
- Most gays and lesbians actively reject traditional (i.e. heterosexual) husband/wife or masculine/feminine sex *roles* as a model for enduring relationships (Peplau, 1991). Gay and lesbian couples tend to adopt 'the ethic of equality and reciprocity. This is especially true for lesbians, who've previously been in 'unequal' heterosexual relationships (Yip, 1999).

'Electronic' friendships

ASK YOURSELF...

- Have you had an online relationship?
- What do you think the potential benefits and dangers of such a relationship might be?

Probably one of the most unexpected uses of the Internet is the development of *online relationships* (or *cyber affairs:* Griffiths, 2000). In the UK, one newspaper reported that there have been over 1000 weddings resulting from

Internet meetings. Cyberspace is becoming another 'singles bar'. There are now many sites aimed at those looking for romance or a sexual liaison. Some are directed at singles, while others seem to encourage or facilitate virtual adultery.

Online relationships can proceed through chat rooms, interactive games or newsgroups. What may begin as a simple e-mail exchange, or innocent chat-room encounter, can escalate into an intense and passionate cyber affair – and eventually into face-to-face sexual encounters. Griffiths (2000) claims that 'electronic communication is the easiest, most disinhibiting and most accessible way to meet potential new partners'.

Box 28.3 Three basic types of online relationship (Griffiths, 1999)

- *Purely virtual:* while these are usually sexually very explicit, the 'correspondents' never meet, just want sexual kicks and don't consider they're being unfaithful to their actual partners.
- Increasingly sexually intense *online contact* may eventually lead to the exchange of photographs, secret telephone calls, letters and meetings. Once the two people have met, and if practically possible, actual time spent together largely replaces online contact.
- An initial *offline* meeting will be maintained largely by an online relationship. This usually involves people living in different countries.

Some concerns about online relationships

The disinhibiting, anonymous nature of the Internet can make online relationships seductive and potentially addictive. As Griffiths (2000) points out:

> What might take months or years in an offline relationship may only take days or weeks online ... the perception of trust, intimacy, and acceptance has the potential to encourage online users to see these relationships as a primary source of companionship and comfort.

According to the sociologist Taylor (in Williams, 2000):

> Face-to-face relationships are steadily declining. Fewer and fewer people take part in civic activities such as ... political party involvement or trade unions as the mass movement towards faceless electronic liaisons continues to increase. In the long run we will become incapable of relating to each other in person at all.

Given the emphasis placed on physical attractiveness in our image-conscious society, the disembodied, anonymous nature of online relationships may help individuals' focus on the content of the message: 'there's no such thing as a bad hair day on the Internet' (Joinson, in Williams, 2000). For people who are normally inhibited, or those who are too cowardly to finish a romantic relationship in person, this is probably a godsend (Williams, 2000).

The other major concern relates to paedophiles. The text-based nature of the communication allows someone to pretend to be, say, a teenager, when in fact they are a 50-year-old man. In this way, vulnerable young people – especially girls – can be lured into an offline meeting, with potentially fatal consequences.

Liking and loving

Rubin (1973) defines liking as positively evaluating another. Loving is *qualitatively* different from liking and comprises three main components:

1. *attachment:* the need for the physical presence and emotional support of the loved one
2. *caring:* a feeling of concern and responsibility for the loved one
3. *intimacy:* the desire for close and confidential contact and communication, wanting to share certain thoughts and feelings with the loved one more fully than with anyone else.

The *Love Scale* can also be applied to same-sex friends, and Rubin found that females reported loving their friends more than men did. But there was no difference between males and females on the *Liking Scale.* Rubin & McNeil (1983) suggest that loving for men may be channelled into single, sexual relationships, while women may be better able to experience attachment, caring and intimacy in a wider range and variety of relationships.

Although love is a label that we learn to attach to our own state of physiological arousal (see Chapter 10), most of the time love doesn't involve intense physical symptoms. Love, therefore, is more usefully thought of as a particular sort of *attitude* that one person has towards another (Rubin & McNeil, 1983).

Different types of love

Berscheid & Walster (1978) distinguish between: (a) *companionate love* ('true love' or 'conjugal love'), 'the affection we feel for those with whom our lives are deeply entwined', including very close friends and marriage partners; and (b) *passionate love* (romantic love, obsessive love, infatuation, 'love sick' or 'being in love'). Romantic love is 'A state of intense absorption in another ... A state of intense physiological arousal.' These are qualitatively different, but companionate love is only a more extreme form of liking ('the affection we feel for casual acquaintances') and corresponds to Rubin's 'love'.

Similarly, Sternberg (1988b) has proposed a 'triangular' model of love, in which three basic components (intimacy, passion and decision/commitment) can be combined to produce *consummate love.* When only two are combined, the resulting love is *romantic, companionate* or *fatuous.*

Berscheid and Walster's, and Sternberg's models are *multidimensional,* in contrast with Rubin's, according to which love is a single, underlying dimension on which

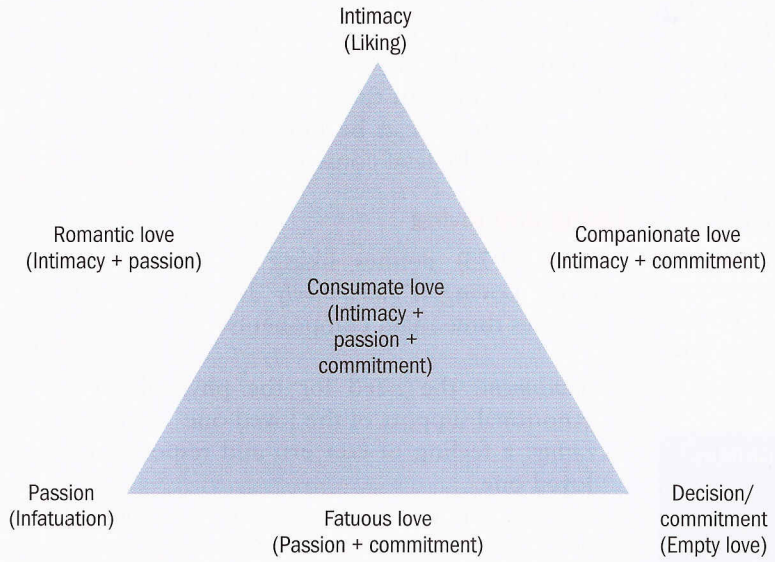


Figure 28.1 Robert Sternberg's (1988b) model of different kinds of love as combinations of three basic components of love (from Myers, D.G. (1994), *Exploring Social Psychology*. New York, McGraw-Hill)

individuals can be ranked in terms of the strength of feeling for a partner. These distinctions are important for understanding how intimate relationships change over time.

The power of love

Box 28.4 Fairy tales as 'carriers' of love



True love conquers all

- According to Moghaddam (2002), the process of teaching individuals about romantic love begins almost as soon as they are born. This takes place through countless *carriers*, which are 'the means by which styles of social thinking and doing are sustained and passed on from generation to generation'. *Symbolic* carriers include flags, conceptual constructions (such as 'nationalism') and fairy tales (such as 'Beauty and the Beast').
- By teenagehood, the ideal of romantic love is deeply ingrained in individuals' behaviour. After learning the story of 'Beauty and the Beast' as a three-year-old:

> *... the teenage girl now tries out different ways to realise her ideals in practice, exploring different ways to improve her skills in romantic relationships toward the ultimate goal that she and her prince will live happily ever after. (Moghaddam, 2002)*

- When asked about their ideal lives in the future, 18-year-olds put romantic love at the centre of their stories. Reaching sexual maturity earlier and having more sexual experience hasn't lessened the belief of the younger generation in the fairy tale of romantic love (see Chapter 37).
- But age is no barrier to falling in love and the pursuit of happiness through romantic love. Increasingly, middle-aged and older people try to keep the romance in their lives. They're willing to go through the trauma of divorce and family break-up when they feel their marriage lacks magic:

> *... What begins as a fairy tale about the prince and princess living happily ever after in a far-away castle, takes such a strong grip and becomes so powerful in personal lives that its influence shapes lifelong development... (Moghaddam, 2002)*

Is romantic love unique to western culture?

American researchers have focused mainly on romantic relationships as the basis for marriage (Fiske, 2004). The popular ('Hollywood') view is that people fall in love and then commit themselves to each other through marriage. Individuals learn that in order to be happy and fulfilled, they must be in love and live for love (Moghaddam, 2002). However, as we've seen, in cultures where

arranged marriages occur, the relationship between love and marriage is the other way around, and marriage is seen as the basis on which to explore a loving relationship (Bellur, 1995). As Bellur notes, the cultural background in which people have learned about love is important in shaping their concept of it.

Box 28.5 Exporting love from Hollywood to the rest of the world

- According to Moghaddam (1998, 2002), romantic love isn't exclusive to western societies. The notion of people falling in love is found in one form or another in most human societies, even where marriages are traditionally arranged by families or friends. For example, an analysis of songs and folklore in 166 societies indicates that 'western' romantic love is recognised in more than 85 per cent of them (Jankowiak & Fischer, 1992). However, Moghaddam (1998) believes that:

  What is unique about romantic love in late twentieth-century Western societies is its pervasiveness: the idea that everyone should marry only when they are in love. Such an idea is fairly new historically and is still limited to Western societies.

- Moghaddam (2002) believes that modern romantic love is also distinct in that it involves two individuals who 'are free to fall in love and to make their own choices as to who will be their partner'.
- This 'democratisation' of romantic love was one consequence of women entering higher education and the labour market in large numbers during the twentieth century. Women's increasing financial independence gave them the power to make choices, including the choice of romantic partners.
- Perhaps no other feature of western culture is being exported or internationalised more than romantic love 'Hollywood style'. Over the last century, there's been an increasing acceptance in western societies of the idea that one should marry for love, and that it's right to end the relationship when love dies. As societies become industrialised and more individualistic, the percentage of people who believe that love must precede marriage increases.

ASK YOURSELF...

- If someone had all the other qualities you desired in a marriage partner, would you marry this person if you were not in love?

When Kephart (1967) asked Americans this question, well over twice as many men replied 'no' as did women. When Simpson *et al.* (1986) repeated the study, more than 80 per cent of both men and women said 'no'.

ASK YOURSELF...

- How might you account for the difference between Kephart's and Simpson *et al.*'s findings? (See Box 28.5.)

This can be explained at least partly by the fact that, 20 years later, financial independence has allowed women to choose marriage partners for reasons other than material necessity. But this doesn't explain why romantic love has become so central for both American men and women (Moghaddam, 1998).

As non-western societies become westernised, there's a greater tendency for young people to say 'no' to the question asked by Kephart and Simpson *et al.* Even in collectivist cultures (such as India and Pakistan), about 50 per cent of young people said 'no', and the indications are that this percentage is rising (Moghaddam, 2002).

Box 28.6 The politics of love

- According to Burr (2003), romantic love is a *discourse*, which, like other discourses, offers a framework against which people may understand their own experience and behaviour, and those of others. We're all subjected to this discourse, through film and television images of true love, young love, adulterous love, love-at-first-sight and unrequited love:

  ... As a way of formatting our thoughts, emotions and behaviour the discourse of romantic love must surely be one of the most prevalent in modern society ...

- This discourse presents romantic love as (a) a part of human nature, the 'emotional cement' that strengthens the sexual relationship between men and women, and (b) the foundation for marriage and family life. Marriage is the appropriate and natural culmination of a romantic alliance.
- While this might seem fairly 'obvious' (i.e. 'true'), feminists were among the first to criticise notions of romantic love.
- From a Marxist perspective, marriage and the family play a crucial role in maintaining the capitalist economy. Men-as-workers need to be 'healthy' and relieved of child-care responsibilities. This makes the role of women central.
- Not only do they look after their men so the latter can sell their labour, but they produce children and provide their caring and sexual services 'free of charge'. This is provided via marriage. This is legitimated by the idea of the 'family wage' – that is, a man should be paid enough money to support himself and his dependent wife and children.
- But if you ask people why men and women get married or what marriage is about, they're likely to say that it's because they love each other, and women care for their

husband and children because they love them. It's 'common sense'.

- But according to Foucault (1976), for example, the discourses of love, marriage and family life are a form of social control, obscuring the reality of the economic arrangements of capitalist society.



Nicole Kidman and Ewan McGregor in *Moulin Rouge* (2001)

However, cultural differences still exist. For example, Levine *et al.* (1995) studied young people in Australia, Brazil, England, Hong Kong, India, Japan, Mexico, Pakistan, the Philippines, Thailand and the USA. Participants from India, Thailand and Pakistan gave the highest proportion of 'yes' replies, while those from England and the USA gave the lowest. These are collectivist and individualist cultures, respectively.

Based on studies conducted in Canada, the Caribbean, Senegal, Uganda, the USA and South Africa, Smith & Bond (1998) conclude that:

> There are relatively universal ways in which people speak about their attachment to others. However, the more detail we add to the measures, explicating exactly what attitudes and behaviours are entailed within the generalised notion of love or romance, the more differences we start to find.

There are also important differences *within* culturally diverse societies, such as Britain, America and Canada. For example, first generation Indian immigrants to Canada (those born abroad who subsequently emigrated to Canada) tend to endorse the idea that marriage precedes love more than second generation Indian Canadians (whose parents came from abroad but who were themselves born in Canada: Vaidyanathan & Naidoo, 1991). Similarly, Dion & Dion (1993) found that Asian Canadians tend to interpret love as more friendship- and caring-based than something 'mysterious', compared with European Canadians. Both these findings are consistent with the distinction between collectivist and individualist cultural beliefs and practices, such as arranged marriages (see above).

An evolutionary theory of love: love as attachment

An *evolutionary* account of love focuses on the *functions* that love evolved to meet. Compared with other primates, humans are dependent on their parents for an exceptionally long period of time. As length of childhood (and related brain size) increased steadily over the last million years or so of *Homo* evolution, so there were strong selection pressures toward the development of (relatively) *monogamous* (one male, one female) *pair-bonding*. In other words:

> Love is ... an evolutionary device to persuade couples to stay together for long enough to give their children a good shot at making it to adulthood ... (Fletcher, 2002)

In our hunter-gatherer ancestral environment, two parents were better than one. Attachment bonds between procreative partners would have greatly enhanced the survival of their offspring (Zeifman & Hazan, 2000).

Bowlby (1969) identified three basic behavioural systems that bond male–female pairs together: attachment, caregiving and sex. Shaver *et al.* (1996) have proposed a theory of adult romantic love in terms of these three systems. So, when we say 'I love you', we can mean any or all of the following.

- *Love as attachment:* 'I am emotionally dependent on you for happiness, safety and security; I feel anxious and lonely when you're gone, relieved and stronger when you're near. I want to be comforted, supported emotionally, and taken care of by you ...'
- *Love as caregiving:* 'I get great pleasure from supporting, caring for and taking care of you; from facilitating your progress, health, growth and happiness ...'

Table 28.1 The four stages of adult attachment in relation to Bowlby's four phases of infant attachment development

Bowlby's phases of infant attachment	Pre-attachment (0–3/4 months)	Attachment-in-the-making (3/4–6/7 months)	Clear-cut attachment (6/7–12/18 months)	Goal-directed partnership (12–18 months onwards)
Four stages of adult attachment	Attraction and flirting	Falling in love	Loving	Life as usual

Based on Zeifman & Hazan (2000)

- *Love as sexual attraction:* 'I am sexually attracted to you and can't get you out of my mind. You excite me, "turn me on", make me feel alive … I want to see you, devour you, touch you, merge with you, lose myself in you, "get off on you" …'

Zeifman & Hazan (2000) believe that there are four stages of adult attachment that mirror Bowlby's (1969) four phases of infants' attachment to the mother(-figure). These are summarised in Table 28.1 (page 476).

STAGE THEORIES OF RELATIONSHIPS

> *ASK YOURSELF…*
> - Do you think there are any 'natural' stages that all intimate (romantic and non-romantic) relationships go through (assuming the 'romantic' ones last a reasonable amount of time – so one-night-stands don't count!).

Our own experience tells us that intimate relationships change and develop over time. Indeed, those which stagnate ('we're not going anywhere'), especially sexual/romantic relationships, may well be doomed to failure (Duck, 1988).

The filter model (Kerckhoff & Davis, 1962)

Kerckhoff and Davis compared 'short-term couples' (together for less than 18 months) with 'long-term couples' (18 months or more) over a seven-month period. According to their *filter model:*

- *similarity of sociological* (or *demographic*) *variables* determines the likelihood of individuals meeting in the first place. To some extent, our choice of friends and partners is made for us; social circumstances reduce the '*field of availables*' (Kerckhoff, 1974) – that is, the range of people that are *realistically* available for us to meet (as opposed to those who are theoretically available). There's considerable *preselection* of the types of people we come into contact with, namely those from our own ethnic, racial, religious, social class and educational groups; these are the types of people we tend to find most attractive initially, since similarity makes communication easier and we've something immediately in common with them, as a group. At this point, attraction has little to do with other people's individual characteristics (this is the first 'filter')
- the next filter involves the psychological characteristics of individuals, specifically *agreement on basic values.* This was found to be the best predictor of the relationship becoming more stable and permanent; those who'd been together for less than 18 months tended to have a stronger relationship when the partners' values coincided
- but with the long-term couples, similarity wasn't the most important factor. The best predictor of a longer-term commitment was *complementarity of emotional needs* (this constitutes the third filter).

Stimulus–value–role theory (Murstein, 1976, 1986, 1987)

According to Murstein's *stimulus-value-role* (SVR) *theory,* intimate relationships proceed from:

- a *stimulus stage,* in which attraction is based on external attributes (such as physical appearance), through
- a *value stage,* in which similarity of values and beliefs becomes much more important, and finally to
- a *role stage,* which involves a commitment based on successful performance of relationship roles, such as husband and wife.

Although all three factors have some influence throughout a relationship, each one assumes greatest significance during one particular stage.

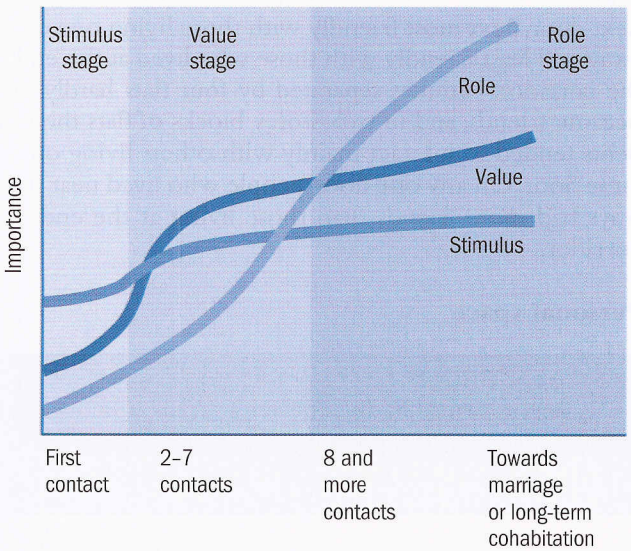


Figure 28.2 States of courtship in SVR theory (Murstein, 1987, based on Brehm, 1992)

An evaluation of stage theories

Brehm (1992) points out that many studies have provided only weak evidence for a fixed sequence of stages in intimate relationships. 'Stages' are probably best regarded as 'phases' that take place at different times for different couples. However, the claim that relationships change and develop isn't in dispute, and it's useful to think of this as involving a beginning, a middle and an end, corresponding to the three questions that were posed at the beginning of the chapter (see *Introduction and overview*). For example, how each partner understands the role of husband and wife, and how well each performs their role, are relatively late influences in a given courtship. The matching of partners' role concepts will be irrelevant to the success of the early stages of the courtship (Duck, 1999).

INTERPERSONAL ATTRACTION: HOW RELATIONSHIPS GET STARTED

A general theoretical framework for explaining initial attraction is that we're attracted to individuals whose presence is *rewarding* for us (e.g. Clore & Byrne, 1974; Lott & Lott, 1974). The more rewards someone provides for us, the more we should be attracted to that individual. A number of factors have been found to influence initial attraction through their reward value, including *proximity, exposure* and *familiarity, physical attractiveness,* and *similarity.*

Proximity, exposure and familiarity

Proximity

Proximity (physical or geographical closeness) represents a minimum requirement for attraction, because the further apart two people live, the lower the probability that they'll ever meet, let alone become friends or marry each other. Festinger *et al.* (1950) studied friendship patterns in a university campus housing complex for married students. People were more friendly with those who lived next door, next most friendly with those living two doors away, and least friendly with those who lived at the end of the corridor. Families separated by four flats hardly ever became friends, and in two-storey blocks of flats the residents tended to interact mainly with others living on the same floor. On any one floor, people who lived near stairways had more friends than those living at the end of a corridor.

Personal space

ASK YOURSELF...

- If you're sitting in an otherwise empty row of seats in a train and someone comes and sits right next to you, how do you think you'd react, and why?

In a series of studies by Sommer, the experimenter deliberately sat close to unsuspecting people when there was plenty of other available space, in order to see how likely they were to react to this invasion of their personal space.

KEY STUDY 28.2 Beware of space invaders in the library (Felipe & Sommer, 1966)

- The unsuspecting participants were female university students studying at a large table (1m x 5m) with six chairs evenly spaced on either side of the table. There were at least two empty chairs on either side of each student, and one opposite.
- There were five experimental conditions in which the female experimenter:
  - a sat next to the student and moved her chair to within about 8 cm of the student's (about as close as possible without actually touching); if the student moved her chair away, the experimenter would move her chair nearer
  - b sat in the chair next to the student at a normal, acceptable distance (about half a metre)
  - c sat two seats away from her (leaving one chair between them)
  - d sat three seats away
  - e sat immediately opposite her (about a metre apart).
- About 55 per cent of the participants in condition (a) stayed in the library for longer than 10 minutes, compared with 90 per cent in conditions (b)–(e) combined; 100 per cent of participants in a control condition (who sat at the same-sized table, with the same number and arrangement of empty chairs, but weren't 'invaded' by the experimenter) stayed longer than 10 minutes.
- After 20 minutes, these percentages reduced to 45 per cent in the first condition, 80 per cent in (b)–(e). and just below 100 per cent in the control condition.
- By the end of the 30-minute experiment, the figures were 30 per cent, 73 per cent and 87 per cent respectively.
- Students were more likely to leave, move away, adjust their chair or erect barriers (such as putting a bag on the table between themselves and the 'intruder') in condition (a).

Similar results were found for male psychiatric patients (Felipe & Sommer, 1966), and for people sitting on park benches (Sommer, 1969). In Hall's (1959, 1966) terms, the stranger in Felipe and Sommer's studies was invading the student's *personal space.* This describes the human behaviour resembling the 'individual distance' of zoo animals (the distance that two individuals of the same species try to keep between each other: Hediger, 1951).

Box 28.7 Personal space

Personal space is a sort of invisible bubble that surrounds us. According to Hall, we learn *proxemic rules* that prescribe:

- the amount of physical distance that's appropriate in daily relationships, and
- the kinds of situations in which closeness or distance are proper.

Hall identifies four main regions or zones of personal space. (See Figure 28.3 on next page.)

There are important *cultural differences* regarding proxemic rules. Each zone of personal space allows the use of different cues of touch, smell, hearing and seeing, which are more important in some cultures than others. Watson & Graves (1966) observed discussion groups of Americans and those from Arab countries; in the latter, there was more direct face-to-face orientation, greater closeness and touching.

South Americans and Arabs have been called *'contact cultures'*, while the Scots and Swedes have been called *'non-contact cultures'*.

The *caste system* in India represents a highly formalised, institutionalised set of proxemic rules.

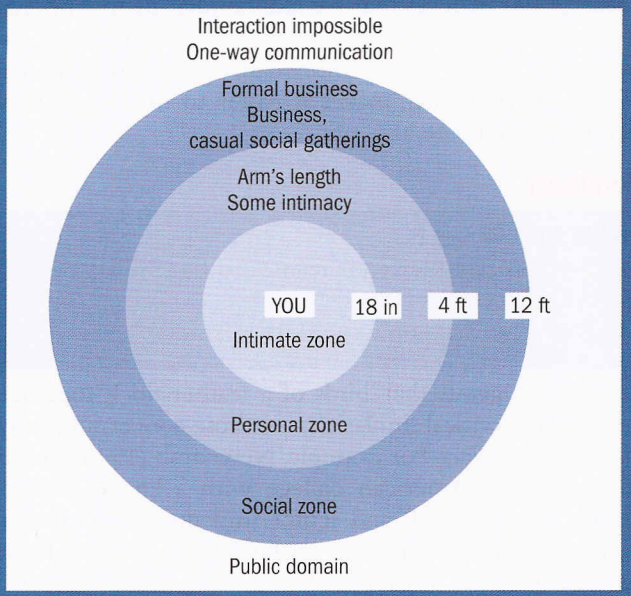


Figure 28.3 Hall's four zones of personal space (from Nicholson, 1977)

A similar concept to personal space is the *body-buffer zone*, the point at which a person begins to feel uncomfortable when approached by another. Criminals convicted of violent crimes compared with non-criminals, and schizophrenics compared with other kinds of psychiatric patients, tend to have *larger* body-buffer zones, that is, they more easily begin to feel uneasy when others walk towards them (Nicholson, 1977).

Our feelings for others may depend on whether proxemic rules are followed, and these rules are themselves influenced by the nature of the relationship. For instance, relatives and intimate friends are allowed much closer proximity – and bodily contact – than mere acquaintances or strangers. As far as bodily contact is concerned, there are different rules for different relatives depending on their gender, and this applies to friends too (see Figure 28.4).

Proximity is just one of several kinds of *social act* which make up the degree of intimacy that exists between two people. According to Argyle & Dean (1965), we all have a dual tendency to approach others and seek their company, and to avoid them and remain separate and independent. The balance between these two opposing tendencies is 'negotiated', non-verbally, in each social situation, so that we try to find a level of intimacy we feel comfortable with.

Successful friendships may require an initial establishment of *boundary understandings*. In Hall's terms, strangers must be 'invited' into our intimate zone and not 'trespass' from an initial casual personal distance. In terms of Argyle

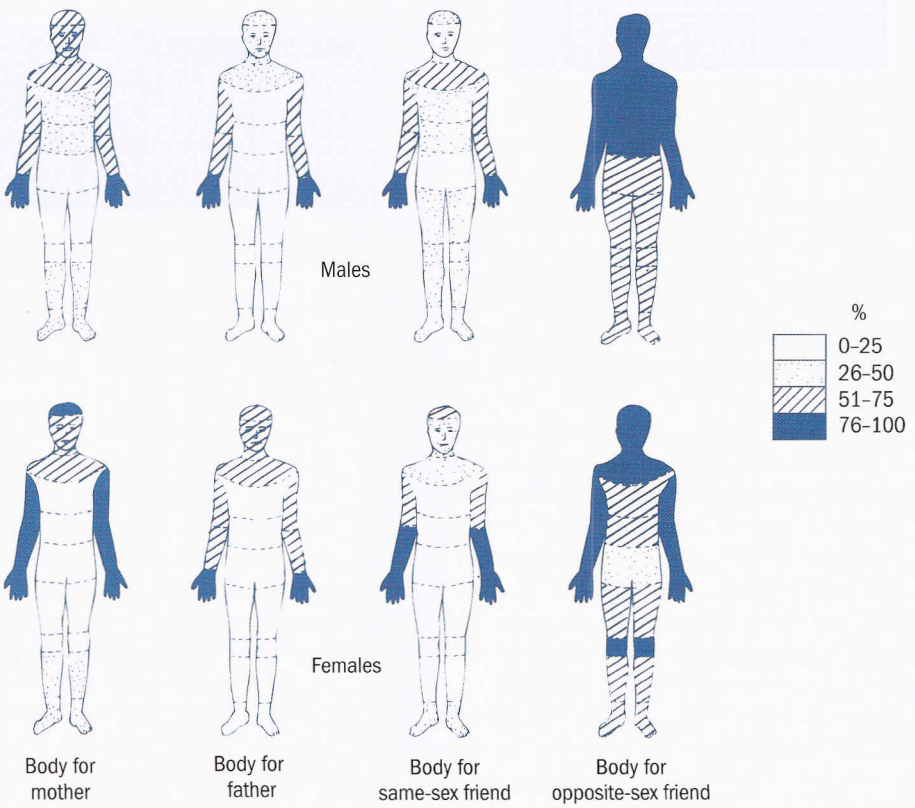


Figure 28.4 Male and female 'bodies for others', as experienced through the amount of touching received from others (Jourard, 1966)

and Dean's equilibrium model of intimacy, strangers (like the experimenter in Sommer's studies) who make a situation uncomfortably intimate too soon are unlikely to become friends.

ASK YOURSELF...

- Do you think it's ethically acceptable to conduct research like Sommer and Felipe's 'library study'?

Exposure and familiarity

Proximity increases the opportunity for interaction (*exposure*), which, in turn, increases *familiarity*. There's considerable evidence that, far from breeding contempt, familiarity breeds fondness (the *mere exposure effect*: Zajonc, 1968). For example, the more times university students saw photographs of men's faces, the more they liked them (Zajonc, 1968).

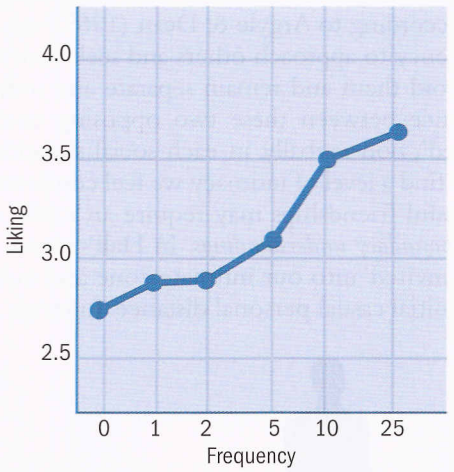


Figure 28.5 The relationship between frequency of exposure and liking. Participants were shown photographs of different faces and the number of times each face was shown was varied. The more they saw a particular face, the more they said they liked the person shown (based on Zajonc, 1968)

According to Argyle (1983), the more two people interact, the more *polarised* their attitudes towards each other become, usually in the direction of greater liking. This, in turn, increases the likelihood of further interaction, but only if the interaction is on an equal footing.

People form friendships with those they encounter frequently (as the mere exposure effect would predict). Asian-Americans date Euro-Americans when they're in close proximity (Fujino, 1997), high-school students form friendships within their own academic subjects (Kubitschek & Hallinan, 1998), and older, relocated adults make friends among their nearest neighbours (Dugan & Kivett, 1998).

This preference for what is familiar extends to our own facial appearance. Mita *et al.* (1977) photographed women students and later showed each student her actual picture together with a mirror-image of it. Most students preferred the latter – this is how we're used to seeing ourselves – while their friends preferred the former – this is how others are used to seeing us!

ASK YOURSELF...

- What is it about familiarity that makes it an influence on attraction?
- Why should we prefer the familiar?

Fiske (2004) believes that we like familiar people because we feel we can understand them easily. If we (think we) understand them, we can more easily predict their behaviour, which, in turn, makes it easier to influence them. Familiar people are also safe.

Similarity

ASK YOURSELF...

- Do you consider your friends to be similar to you? If so, in what ways?
- Does this also apply to sexual partners?

Evidence suggests that 'birds of a feather flock together', and that the critical similarities are those concerning *beliefs*, *attitudes* and *values*. For example, Newcomb (1943) studied students at an American college with a liberal tradition among teaching staff and senior students. Many students coming from conservative backgrounds adopted liberal attitudes in order to gain the liking and acceptance of their classmates. Griffitt & Veitch (1974) paid 13 males to spend ten days in a fall-out shelter. Those with similar attitudes and opinions liked each other most by the end of the study, particularly if they agreed on highly salient issues.

ASK YOURSELF...

- What is it about similarity that makes it an influence on attraction?
- Why should we prefer people who (we believe) are like us?

Rubin (1973) suggests that similarity is rewarding because:

- agreement may provide a basis for engaging in joint activities
- a person who agrees with us helps to increase our confidence in our own opinions, which enhances our self-esteem; according to Duck (1992), the validation that friends give us is experienced as evidence of the accuracy of our *personal constructs* (see Chapter 42)
- most people are vain enough to believe that anyone who shares their views must be a sensitive and praiseworthy individual
- people who agree about things that matter to them generally find it easier to communicate
- we may assume that people with similar attitudes to ourselves will like us, and so we like them in turn (*reciprocal liking*).

According to Fiske (2004), if someone resembles prior experience or the self, then at least we have the illusion of knowing 'what makes them tick'. In this respect, familiarity

and similarity influence attraction in comparable ways. We mostly seek out others who make us feel good about ourselves:

> ... People who resemble us or agree with us also reassure us. People who validate us and like us presumably won't do us any harm ... (Fiske, 2004)

According to the *similarity-attraction principle,* if familiarity underlies attraction, and if the most familiar people are those who are like us, then people like us are attractive. This stems in part from *consistency theories of attitude change* (see Chapter 24). The most relevant here is Heider's (1958) *balance theory.* People prefer and infer affective, cognitive and behavioural consistency – in themselves and others. Psychologically related individuals will see each other as similar if they like each other, and they'll see each other as likeable if they're similar. In other words, people like to agree with their friends and to befriend those who agree with them. This describes *interpersonal balance,* 'a harmonious state, one in which the entities comprising the situation and the feelings about them fit together without stress' (Heider, 1958).

Physical attractiveness

While it often takes time to find out about other people's attitudes and values, their physical attractiveness is immediately apparent. Physical attractiveness has been studied as an influence on attraction in its own right, as well as one aspect of similarity.

The attractiveness stereotype

As we saw in Chapter 22, we tend to perceive attractive-looking people as also having more attractive personalities (the *attractiveness stereotype*). Dion *et al.* (1972) found that photographs of attractive people, compared with unattractive people, were consistently credited with more desirable qualities – sexually warm and responsive, kind, strong, outgoing, nurturant, sensitive, interesting, poised, sociable, exciting dates, better character, happily married, socially and professionally successful and enjoying more fulfilling lives. So, 'what is beautiful is socially good' (Fiske, 2004).

The power of the physical attractiveness stereotype is demonstrated in a classic study by Snyder *et al.* (1977).

KEY STUDY 28.3 The self-fulfilling nature of the attractiveness stereotype (Snyder *et al.*, 1977)

- Male undergraduates received photographs of women before a getting-acquainted telephone conversation.
- The photographs, independently rated as either quite attractive or quite unattractive, didn't depict their actual partners, who were unaware of the experimental manipulation.
- Before the telephone conversation, the men rated the supposedly attractive partner as more sociable, poised, humorous and adept.
- During the conversation, independent judges rated these men as more sociable, sexually warm, outgoing, interesting, independent, bold, humorous and adept.
- In response, their (actual) partners, who'd been randomly allocated to the 'attractive' or 'unattractive' conditions, behaved in similar ways.
- The men's expectations about their partners, based on the photographs, created a *self-fulfilling prophecy.*

However, Dermer & Thiel (1975) found that extremely attractive women were judged (by female participants) to be egotistic, vain, materialistic, snobbish and less likely to be successfully married. This suggests that it's not always to our advantage to be seen as highly attractive, and one situation where this may apply is where a criminal's good looks played a part in the crime.

Dion & Dion (1995) observe that stereotyping based on facial attractiveness appears at least as early as six years old. They also suggest that this might be linked to the *just world hypothesis,* such that there's a positive bias towards 'winners', equivalent to 'blaming the victim' (see Chapter 23).

Is the attractiveness stereotype culturally relative?

Like most attractiveness research, studies of the attractiveness stereotype are American, the prime example of an individualist culture. Although a physical attractiveness stereotype can be found in some collectivist cultures (such as Korea and Taiwan), the content differs. For example, in Korea attractive people aren't seen as more powerful but as showing more concern for others and more integrity. In other words, 'the beautiful receive the benefits of social status, embodying that culture's ideal values' (Fiske, 2004).

What makes someone attractive?

Different cultures have different criteria concerning physical beauty. For example, chipped teeth, body scars, artificially elongated heads and bound feet have all been regarded as beautiful, and in western culture, definitions of beauty change over time, as in the 'ideal' figure for women (see Chapter 44.) Traditionally, men have emphasised physical attractiveness, including facial beauty, more than women have. But women haven't been disinterested in men's appearance: their stature, particularly height, plus a muscular body and (currently) firm, rounded buttocks influence how attractive they're judged to be (by women, anyway!). Nor are they indifferent about men's facial appearance.

According to Brehm (1992), in the context of personal ads and commercial dating services, the primary 'resource' (or reward) offered by females seeking a male partner is still physical attractiveness, which matches what men are actually seeking from a female partner. But this appears to be an almost universal male preference, not one confined to western culture (Buss, 1989: see below, page 487).



Jude Law in *The Talented Mr Ripley* (1999)

> ***ASK YOURSELF...***
> - Think of someone you find extremely facially attractive, and try to specify what it is about their face that you like.

Defining facial attractiveness

The idea that beauty is in the eye of the beholder stems from the philosopher, Hume (1757). This implies, of course, that beauty cannot be defined objectively,. However, although any two individuals can vary widely in what they consider facially attractive, these differences actually vary around an underlying norm, which is surprisingly consistent across cultures (Berry, 2000; Langlois & Roggman, 1990). Langlois *et al.* (1987) found that when babies under one year are shown faces that adults consider attractive or unattractive, they spend longer looking at the former (implying that they prefer them: see Chapter 16). Clearly, they're too young to have learned cultural standards of beauty.

Langlois & Rogmann (1990) took photographs of faces with standard pose, expression and lighting, and then scanned them into a computer. Each image was then divided into a very large number of tiny squares (or *pixels*), and the brightnesses of corresponding pixels in different same-sex faces were *averaged* to produce *computer-composite images.* When people were asked to judge the attractiveness of these composite faces (made from four, eight, 16, or 32 faces), they rated them as increasingly attractive the more faces that went into each image. This applied to both male and female faces.

The greater the number of faces making up a composite image, the more the peculiarities of particular faces become ironed out. Hence, as Bruce & Young (1998) observe:

> It seems that moving a facial image closer to the average ... increases its perceived attractiveness ...



Computer-composite faces. The columns show composite sets created from female faces (left) or from male faces (right). From top to bottom, rows show composites created by averaging across 4, 8, 16 and 32 faces (from Bruce & Young, 1998)

If this is a genuine phenomenon, how can we explain it? Bruce and Young suggest two possible explanations:

- although we've not seen composite faces before, *averaged* faces (close to the average of faces we *have* see before) are preferred because they seem *familiar* (seen above, page 480). This is consistent with the idea that attractive people are seen as possessing high status – that is, they represent the 'culturally good and the socially desirable' (Fiske, 2004)
- individuals whose characteristics are close to the average of the population might be preferred, because they're less likely to carry harmful genetic mutations (Langlois & Roggman, 1990).

A third possible explanation (an almost 'obvious' one) is that average features (by definition) omit every 'too': too big, too small, too short, too long, and so on (Fiske, 2004).

Is attractiveness really no more than averageness? This seems unlikely. For example, if we describe someone as 'average looking', we usually mean that s/he is neither 'good-looking' nor 'ugly', and movie stars and sex symbols *aren't* obviously average (otherwise most of us would be sex symbols!).

According to Perret *et al.* (1994), the average derived from highly attractive faces is consistently preferred to the average of the entire set of photographs they were taken from. This wouldn't happen if 'attractive' equalled 'average. When the difference between the average shape of attractive faces and the average shape of the entire set was increased, perceived attractiveness of the former also increased. But the effect of this was to make the resulting faces *more different* from the average. Perret *et al.* found exactly the same pattern of results for European and Japanese faces, regardless of whether they were judged by European or Japanese people.

We also seem to prefer more *symmetrical* faces. While most faces (to varying degrees) are, in fact, asymmetrical around the vertical midline, even those with only slight asymmetry can be made more attractive (Bruce & Young, 1998).

In addition, having younger-looking features, for both sexes, seems to be an advantage. For women, 'favourites' include child-like features (large eyes, spaced far apart, small chin and nose), narrow face and prominent cheek-bones, expressive features (high eyebrows and large smile), and sexual cues (larger lower lip and well-groomed, full hair). The recent trend in cosmetic surgery for full lips has resulted, for some, in a bizarre change of appearance.



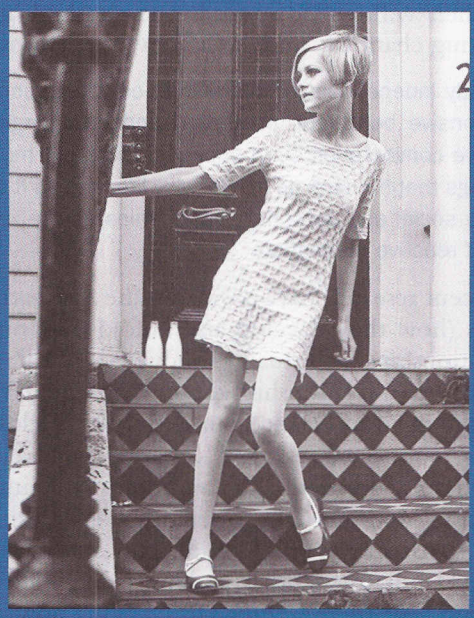
Actress Lesley Ash – the after photo

Facial attractiveness in men is less often studied, but high cheekbones and a rugged jaw seem to be favoured (Berry, 2000).

From a *sociobiological* perspective (see Chapter 2), attractive facial features may signal sexual maturity or fertility. This is also consistent with the tendency to equate beauty with youthfulness (but see Chapters 22 and 39, and Box 28.8).

Box 28.8 The sociobiology of beauty

- According to Singh (in Charter, 1995), anyone whose waist size exceeds their hip measurement (i.e. whose *waist-hip ratio* – WHR – is greater than one) is much more at risk from heart disease and diabetes.
- Furthermore, Singh claims to have shown that women with a waist-hip ratio of 0.7 have universal appeal as potential partners, because their body shape transmits signals about health, sexual maturity, and fertility. For males the ideal is more like 0.85–0.9.
- This fits in perfectly with Darwinian theories of human mate selection, which claim that both men and women select partners who enable them to enhance reproductive success, thus ensuring the survival of their genes into the next generation (see Chapter 2 and Gross & Rolls, 2004).
- Twiggy's WHR was a surprising 0.73 (her vital statistics were 31–24–33), and although *Playboy* centrefolds have shown a 20 per cent decline in plumpness over the years (see Chapter 44), they've shown a consistent WHR of 0.7.
- Singh has been criticised on several grounds. The diseases he claims are correlated with high WHRs affect mainly older (post-menopausal) women, and so aren't relevant to mating. They're also historically quite recent.



As well as her facial beauty, 1960s model Twiggy's waist-hip ratio was (surprisingly) an attractive 0.73

The matching hypothesis

According to *social exchange theory* (e.g. Thibaut & Kelley, 1959: see below), people are more likely to become romantically involved if they're fairly closely matched in their ability to reward one another. Ideally, we'd all have the 'perfect partner' because, the theory says, we're all selfish. But since this is impossible, we try to find a compromise solution. The best general bargain that can be struck is a *value-match,* a subjective belief that our partner is the most rewarding we could realistically hope to find.

Several studies have tested the *matching hypothesis* (Walster *et al.*, 1966; Dion & Berscheid, 1974; Berscheid *et al.*, 1971; Silverman, 1971; Murstein, 1972; Berscheid & Walster, 1974). These studies generally show that people rated as being of high, low or average attractiveness tend to choose partners of a corresponding level of attractiveness. Indeed, according to Price & Vandenberg (1979):

> The matching phenomenon [of physical attraction between marriage partners] is stable within and across generations.

The findings from the various matching hypothesis studies imply that the kind of partner we'd be satisfied with is one we feel won't reject us, rather than one we positively desire. Brown (1986), however, maintains that the matching phenomenon results from a well-learned sense of what's 'fitting', rather than a fear of being rebuffed. For Brown, we learn to adjust our expectations of rewards in line with what we believe we have to offer others.

An evaluation of attraction research

According to Duck (1999), the 'magnetic metaphor' of attraction implies that people are unwittingly, and almost against their will, pulled towards one another's inherent, pre-existing characteristics. It's a view of relationships as:

> ... implicitly independent of interaction, co-construction, mutually responsive behaviour, or shared understandings derived from active conversation ... In short, it leaves out most of the other things that humans do in everyday life, and so it serves to caricature social and personal relationships as the unthinking domain of reactive magnetism ...

More recent research has considered the *dynamics* of relationships (how they develop and unfold over time), and how relationships are actually conducted in real life. One feature of 'real' relationships is their inherent tensions, such as the need to balance our desire for disclosure and openness, connectedness and interdependence on the one hand, and the desire for autonomy and independence, privacy and the right to retain secrets on the other.

Not surprisingly, this shift has involved fewer controlled laboratory studies, and more exploration of life as it's lived 'out there' (Duck, 1999). This now includes such diverse research areas as *homosexual* and *electronic* (online or cyberspace) relationships (see above).

WHAT KEEPS PEOPLE TOGETHER?

ASK YOURSELF...

- What do all the important relationships in your life have in common?

You may say something to the effect that they provide you with security, happiness, contentment, fun and so on, and (if you're honest) that they can also be complex, demanding and, at times, even painful. If all relationships involve both positive and negative, desirable and undesirable aspects, what determines our continued involvement in them?

Social exchange theory

Social exchange theory (SET) provides a general framework for analysing all kinds of relationship, both intimate and non-intimate, and is really an extension of *reward theory* (see above, page 478).

According to Homans (1974), we view our feelings for others in terms of profits (the amount of reward obtained from a relationship minus the cost). The greater the reward and lower the cost, the greater the profit and hence the attraction. Blau (1964) argues that interactions are 'expensive': they take time, energy and commitment, and may involve unpleasant emotions and experiences. Because of this, what we get out of a relationship must be more than what we put in.

Similarly, Berscheid & Walster (1978) argue that in any social interaction there's an exchange of rewards (such as affection, information and status), and that the degree of attraction or liking will reflect how people evaluate the rewards they receive relative to those they give.

ASK YOURSELF...

- Is it appropriate to think of relationships in this economic, capitalistic, way?
- Are relationships really like that?

An evaluation of SET

Social exchange theory sees people as fundamentally selfish and human relationships as based primarily on self-interest. But this is a *metaphor* for human relationships, and it shouldn't be taken too literally. However, although we like to believe that the joy of giving is as important as the desire to receive, we have to admit that our attitudes toward other people are determined to a large extent by our assessments of the rewards they hold for us (Rubin, 1973).

Equally, though, Rubin believes that SET doesn't provide an adequate, complete account:

> Human beings are sometimes altruistic in the fullest sense of the word. They make sacrifices for the sake of others without any consideration of the rewards they will obtain from them in return ...

Altruism is most often and most clearly seen in close interpersonal relationships (see Chapter 30).

Indeed, some psychologists make the distinction between 'true' love and friendship, which are altruistic, and less admirable forms which are based on considerations of exchange (Brown, 1986). Fromm (1962) defines true love as giving, as opposed to the false love of the 'marketing character' which depends upon expecting to have the favours returned. Support for this distinction comes from studies by Clark & Mills (1979, 1993),who identified two kinds of intimate relationship:

- the *communal couple,* in which each partner gives out of concern for the other
- the *exchange couple,* in which each keeps mental records of who's 'ahead' and who's 'behind'.

SET implies that *all* relationships are of the exchange variety. Exchange might describe some kinds of relationship, such as impersonal friendships and relationships between business associates, but in communal relationships, people don't track outcomes (who did what for whom: Clark, 1984). Instead, they track each other's needs, and one partner may need more than the other, at different times, or even throughout the relationship (Clark *et al.*, 1986). Fiske (2004) suggests that thinking of family relationships as communal explains why parents don't normally 'charge' their children for their upbringing. According to Clark & Grote (1998), communal relationships operate by different norms from exchange relationships.

One of those norms is *reciprocity,* which involves the repayment of specific benefits ('you scratch my back, and I'll scratch yours': see Chapter 27). Perhaps contrary to what most people would expect, reciprocity is particularly strong in most casual relationships, but weaker in more intimate communal relationships (Clark & Mills, 1993). Indeed, 'exchange' implies that people reciprocate benefit for benefit, resulting in an *equivalence* of outcomes (Fiske, 2004). The communal couple's responsiveness to each other's needs represents a broader type of reciprocity. In some form, reciprocity appears to be a fundamental aspect of human social exchanges (Dovidio & Penner, 2004), evident in all known cultures (Moghaddam *et al.*, 1993).

Clearly, SET is a greatly oversimplified account of human relationships. It simply cannot accommodate the rich diversity and complexity of relationships. At best, it may describe a certain type of superficial and probably short-term relationship.

Equity theory

SET is really a special case of a more general account of human relationships called *equity theory* (ET). The extra component in ET that's added to reward, cost and profit is *investment*. For Brown (1986):

> A person's investments are not just financial; they are anything at all that is believed to entitle him to his rewards, costs, and profits. An investment is any factor to be weighed in determining fair profits or losses.

Equity *doesn't* mean equality (as implied by 'exchange'), but a *constant ratio* of rewards to costs or profit to investment. So, equity theory involves a concern with *fairness,* and it's *changes* in the ratio of what you put in and what you get out of a relationship which are likely to cause changes in how you feel about it, rather than the initial ratio. You may believe it's fair and just that you give more than you get, but if you start giving very much more than you did and receiving proportionately less, then you're likely to become dissatisfied.

An evaluation of ET

ET is an improvement on SET, and it seemed to predict satisfaction and liking in relationships (Walster *et al.*, 1978). But relationships *don't* become more equitable over time, and equity *doesn't* predict the stability or quality of relationships over time (Van Yperen & Buunk, 1990).

However, some versions of SET do actually take account of factors other than the simple and crude profit motives of social interactors. One of these was introduced by Thibaut & Kelley (1959).

Box 28.9 The concepts of comparison level and comparison level for alternatives (Thibaut & Kelley, 1959)

- *Comparison level* (CL) is essentially the average level of rewards and costs you're used to in relationships, and is the basic level you expect in any future relationship. So, if your current reward:cost ratio falls below your CL, the relationship will be unsatisfying. If it's above your CL, you'll be satisfied with the relationship.
- *Comparison level for alternatives* (CL alt.) is essentially your expectation about the reward:cost ratio which *could* be obtained in other relationships. If your current ratio in a relationship exceeds the CL alt., then you're doing better in it than you could do elsewhere. As a result, the relationship should be satisfying and likely to continue. But if the CL alt. exceeds your current reward:cost ratio, then you're doing worse than you could do elsewhere. As a result, the relationship should be unsatisfying and unlikely to continue.

According to Duck (1988), the concept of CL alt. implies that the endurance of a relationship (as far as one partner is concerned) could be due to:

- the qualities of the other partner and the relationship
- the negative and unattractive features of the perceived alternatives, or
- the perceived costs of leaving.

But this still portrays people as being fundamentally selfish, and many researchers (e.g. Duck, 1988; Walster *et al.*, 1978) prefer to see relationships as being maintained by an equitable distribution of rewards and costs for both partners. In this approach, people are seen as being concerned with the equity of outcomes for both themselves and their partners.

Murstein *et al.* (1977) argue that concern with either exchange or equity is negatively correlated with marital adjustment. People in close relationships don't think in terms of rewards and costs at all – until they start to feel dissatisfied (Argyle, 1987). Murstein & MacDonald (1983) have argued that although the principles of exchange and equity play a significant role in intimate relationships, a conscious concern with 'getting a fair deal', especially in the short term, makes *compatibility* (see below) very hard to achieve. This is true in both friendship and, especially, marriage. This corresponds to Clark and Mills's *exchange couple* (see above).

Complementarity

ASK YOURSELF...

- Think of your most successful relationship(s) – past and/or present.
- What made it/them work?
- Did the 'essential ingredients' change as the relationship(s) developed?

According to Kerckhoff & Davis's (1962) filter model (see above), *complementarity of needs* becomes increasingly important as relationships become long-term. According to Winch (1958), happy marriages are often based on each partner's ability to fulfil the needs of the other. For example, a domineering person could more easily satisfy a partner who needs to be dominated than one who's equally domineering, and Winch found some empirical support for this view.

Although some complementarity may evolve as a relationship develops, people seem, if anything, slightly more likely to marry those whose needs and personalities are *similar* (the *matching phenomenon*) (e.g. Berscheid & Walster, 1978). Indeed, Berscheid & Reis (1998) argue that the overwhelming evidence favours similarity:

> ... Altogether, support is weak for people's intuition that opposites, exotics, or mysteries form the primary basis for attraction, whereas support is strong for the similarity-attraction principle.

In direct contradiction of the opposites-attract hypothesis, Felmlee (1998) examined 'fatal attractions' to a partner with qualities that differed from the partner and from the average. Descriptions of these terminated relationships indicated that even when these dissimilar, unique or extreme qualities might have been intriguing or appealing to begin with, it was the self-same qualities that eventually produced disenchantment.



Complementarity of resources

Instead of complementary needs, what about complementarity in resources (Brehm, 1992)? As we noted earlier, men seem to give a universally higher priority to 'good looks' in their female partners than do women in their male partners, while the situation is reversed when it comes to 'good financial prospect' and 'good earning capacity'. Based on a study of 37 cultures (including Nigeria, South Africa, Japan, Estonia, Zambia, Columbia, Poland, Germany, Spain, France, China, Palestinian Arabs, Italy and The Netherlands) involving over 10,000 people, Buss (1989) concluded that these sex differences 'appear to be deeply rooted in the evolutionary history of our species'.

CRITICAL DISCUSSION 28.1 Do our genes dictate what we want in a mate?

- According to Buss (1988, 1989), the chances of reproductive success should be increased for men who mate with younger, healthy adult females, as opposed to older, unhealthy ones. Fertility is a function of the mother's age and health, which also affects pregnancy and her ability to care for her child.
- Men often have to rely on a woman's physical appearance in order to estimate her age and health, with younger, healthier women being perceived as more attractive (see Box 28.8).
- Women's mate selection depends on their need for a provider to take care of them during pregnancy and nursing: men seen as powerful and controlling resources that contribute to the mother and child's welfare will be seen as especially attractive.
- Buss's sociobiological explanation removes male–female relationships from their cultural or historical context. This

is captured in the use of the term 'mate selection', which is normally used to describe non-human animals.
- Perhaps women have been forced to obtain desirable resources through men, because they've been denied direct access to political and economic power. Traditionally, a woman has been regarded as the man's property, whereby her beauty increases his status and respect in others' eyes.
- Buss conveniently seems to overlook a major finding from his (1989) study: 'kind' and 'intelligent' were universally ranked as *more important* than 'physically attractive' or 'good earning power' by both men and women!
- Simpson *et al.*'s (1986) findings that women are increasingly marrying for reasons ***other than*** material necessity contradict Buss's sociobiological explanation (see above, page 475).
- How can Buss's argument account for homosexual relationships, which clearly don't contribute to the survival of the species, but which are subject to many of the same sociopsychological influences involved in heterosexual relationships (Brehm, 1992)?

Compatibility

The importance of similarity

Complementarity, as far as it exists, can be seen as a component of *compatibility,* but *similarity* plays a much larger part in keeping couples together. For example, individuals with similar needs (Meyer & Pepper, 1977), attitudes, likes and dislikes (Newcomb, 1978), and who are similar in attractiveness (White, 1980), are more likely to remain in a relationship than dissimilar individuals.

KEY STUDY 28.4 Do birds of a feather stay together?
- Hill *et al.* (1976) studied 231 steadily dating couples over a two-year period, at the end of which 103 couples (45 per cent) had broken up.
- The surviving couples tended to be more alike in terms of age, intelligence, educational and career plans, as well as physical attractiveness. Those who split up often mentioned differences in interests, background, sexual attitudes and ideas about marriage.
- About 80 per cent of the couples who described themselves as being 'in love' at the start stayed together, compared with 56 per cent who didn't. Of couples in which both members initially reported being equally involved in the relationship, only 23 per cent broke up, but where one member was much more involved than the other, 54 per cent did so.
- The latter is a highly unstable couple, in which the one who's more involved (putting more in but getting less in return) may feel dependent and exploited, while the one who's less involved (putting less in but getting more in return) may feel restless and guilty (which implies some sense of fairness).



Jack and Vera Duckworth from *Coronation Street* – complementarity personified!

Marital satisfaction

This is another way of looking at compatibility. In a review of studies looking at marital satisfaction and communication, Duck (1992) found that happy couples give more positive and consistent non-verbal cues than unhappy couples, express more agreement and approval for the other's ideas and suggestions, talk more about their relationship, and are more willing to compromise on difficult decisions.

Lauer & Lauer (1985) asked several hundred couples married for at least 15 years why they thought their marriage had lasted. They stressed *friendship* (e.g. 'My spouse is my best friend'), *commitment* ('Marriage is a long-term commitment'), *similarity* ('We agree on how and how often to show affection'), and *positive affect* ('We laugh together') as the basic elements in an enduring relationship. These findings could be seen as implying a successful transition from passionate to companionate love.

RELATIONSHIP BREAKDOWN AND DISSOLUTION

ASK YOURSELF...
- Think of your most unsuccessful relationship(s).
- Why did it/they go wrong?
- Was it to do with you as individuals, or 'circumstances', or a mixture of the two?

Why do relationships go wrong?

According to Duck (2001), there's an almost infinite number of reasons why relationships break up. But they can be put into three broad categories:

1. *pre-existing doom:* incompatibility and failure are almost predestined (for example, 'Schoolgirl, 17, marries her 50-year-old teacher, who's already a grandfather')

2. *mechanical failure:* two suitable people of goodwill and good nature nevertheless find they cannot live together (this is the most common cause)
3. *sudden death:* the discovery of a betrayal or infidelity can lead to the immediate termination of a romantic relationship (see below).

Duck believes that the 'official' reasons given to others (including the partner) to justify the break-up are far more interesting psychologically than the real reasons. The psychology of break-up involves a whole layer of individual psychological processes, group processes, cultural rules and self-presentation. But this applies mainly to romantic relationships, rather than friendships.

When you fall out with a friend, there's usually no formal or public 'announcement'. There's no need for this, because friendships aren't exclusive in the way that most sexual relationships are (it's 'normal' to have several friends at once, but not several partners!). As Duck says:

> ... Truly committed romantic relationships necessarily involve the foregoing of other romantic relationships and commitment to only one partner ('forsaking all others', as it says in the marriage ceremony) ...

Marital unhappiness and divorce

Duck (1988, 1992) has identified several factors that make it more likely that a marriage will be unhappy and/or end in divorce.

- Marriages in which the partners are *younger than average* tend to be more unstable. This can be understood by reference to Erikson's concept of *intimacy* (see Chapter 38). Such marriages often involve early parenthood; the young couple has little time to adjust to the new responsibilities of marriage before financial and housing problems are added with the arrival of a baby (Kellmer Pringle, 1986).
- Marriages between couples from *lower socio-economic groups* and *educational levels* tend to be more unstable. These are also the couples which tend to have their children very early in marriage.
- Marriages between partners from *different demographic backgrounds* (race, religion, and so on.) also tend to be more unstable. This can be related to Kerckhoff and Davis's filter model.
- Marriages between people who've experienced *parental divorce* as children, or who've had a greater *number of sexual partners* than average before marriage tend to be more unstable.

While these factors are important, only a proportion of marriages involving young, lower class individuals or those from different cultural backgrounds and so on actually end in divorce. Conversely, many divorces will involve couples who don't fit any of these descriptions. So what other factors may be involved?

According to Brehm (1992), there are two broad types of cause: *structural* (gender, duration of the relationship, the presence of children and role strain created by competing demands of work and family) and *conflict resolution*.

Gender differences

Men and women seem to differ in their perception of problems in a relationship. In general, women report more problems, and there's some evidence that the degree of female dissatisfaction is a better predictor than male unhappiness of whether the relationship will end. This could be because women are more sensitive to relationship problems than men. Alternatively, men and women may come into relationships with different expectations and hopes, with men's generally being fulfilled to a greater extent than women's.

Consistent with this possibility is evidence of gender differences in the specific type of problems that are reported. For example, divorcing men and women are equally likely to cite communication problems as a cause of their splitting up. But women stress basic unhappiness and incompatibility more than men do.

Men also seem particularly upset by 'sexual withholding' by a female partner, while women are distressed by a male partner's sexual aggression. This is consistent with the finding that men tend to fall in love more easily than women (Baumeister & Bratslavsky, 1999), which is contrary to the popular myth about women demanding commitment and men fighting shy of it. Men also seem to respond more quickly to any intimacy changes (positive and negative), at both earlier and later stages of a relationship (Fiske, 2004).

Duration of relationships and the passage of time

The longer partners have known each other before marriage, the more likely they are to be satisfied in the marriage, and the less likely they are to divorce. However,

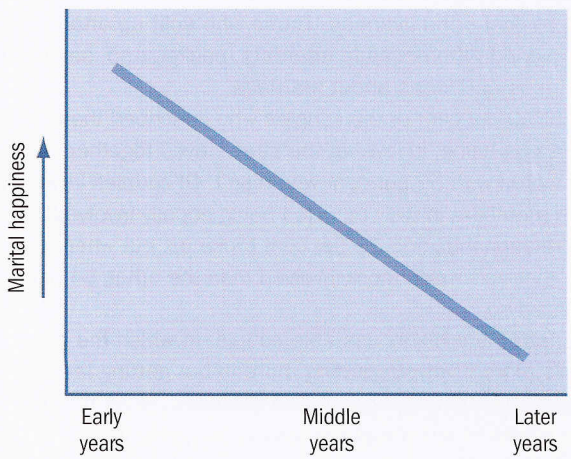


Figure 28.6 A linear life-cycle (based on Brehm, 1992)

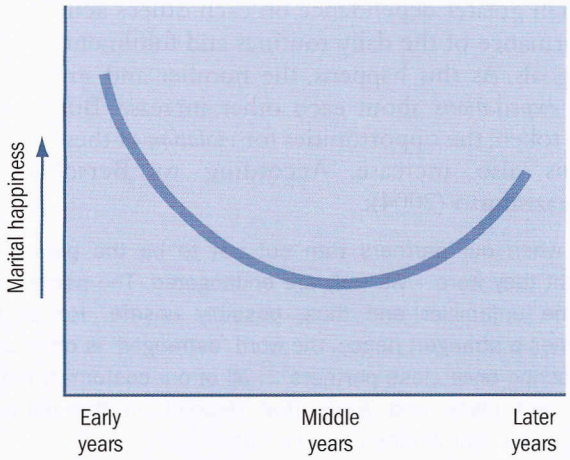


Figure 28.7 A curvilinear life cycle (based on Brehm, 1992)

couples who've have cohabited before marriage report fewer barriers to ending the marriage, and the longer a relationship lasts, the more people blame their partners for negative events.

Two major views of changes in marital satisfaction over time are Pineo's (1961) *linear model* and Burr's (1970) *curvilinear model*. According to the linear model, there's an inevitable fading of the romantic 'high' of courtship before marriage. Also, people marry because they've achieved a 'good fit' with their partner. So, any changes that occur in either partner will reduce their compatibility. For example, if one partner becomes more self-confident (ironically, through the support gained from the relationship), there may be increased conflict between two 'equals' competing for superiority.

The curvilinear model (see Figure 28.7) proposes that marital happiness is greatest in the earliest years. Marital satisfaction declines as children are born and grow up, then increases again as they mature and leave home.

While it's generally agreed that there's a decline in satisfaction during the early years, whether there's an actual increase or just a levelling off after that remains a matter of debate. Gilford & Bengtson (1979) argue that it's an oversimplification to talk about 'marital satisfaction'. Instead, we should look at two life cycles: the *pattern of positive rewards,* and the *pattern of negative costs.* The early years are associated with very high rewards and very high costs, while in the middle years there's a decline in both. In the later years, costs continue to decline, but there's an increase in rewards.

Conflict resolution

According to Duck (1988), some kind and degree of conflict is inevitable in all relationships. But the process of resolving conflicts can often be positive, promoting growth of the relationship (Wood & Duck, 1995).The important question, therefore, isn't whether there's conflict, but *how* it's handled. However, recurring conflicts may indicate an inability to resolve the underlying source; the partners may come to doubt each other as reasonable persons, leading to a 'digging in of the heels', a disaffection with each other and, ultimately, a 'strong falling out' (Berry & Willingham, 1997).

Some degree of overt conflict ('getting it out in the open') can improve a relationship – talking it through and working it out. But differences can result in destructive behaviour, in which partners fail to accommodate to each other's needs. This, in turn, can produce a *conflict spiral,* where one partner responds to the other's negative emotion with negative emotion, and so on. *Unregulated couples,* who don't balance their negative reactions with at least an equal number of positive ones, are headed for trouble (Fiske, 2004).

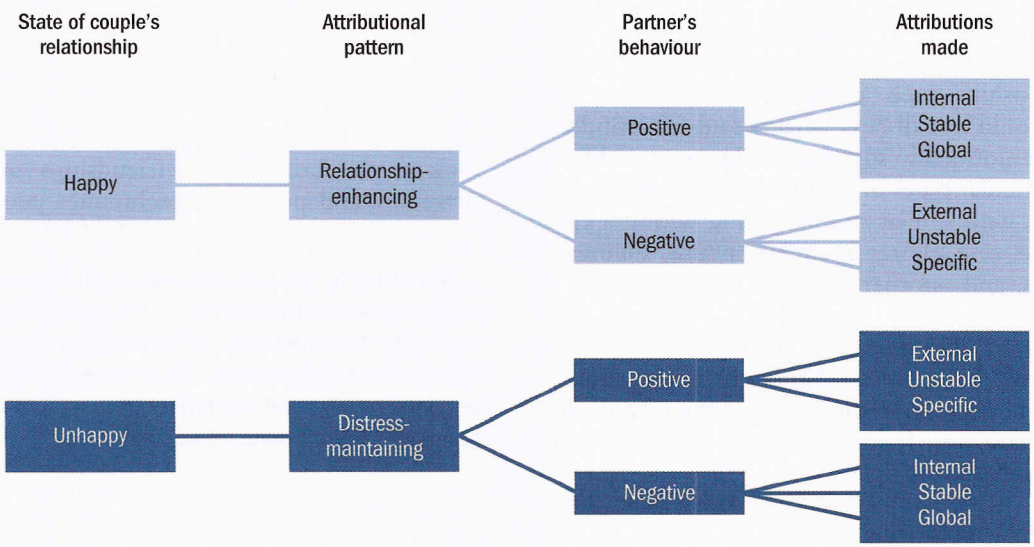


Figure 28.8 Attributions made by happy and unhappy couples according to Bradbury & Fincham (1990) (from Brehm, S.S. (1992) *Intimate Relationships* (2nd edition). New York, McGraw-Hill)

According to Bradbury & Fincham (1990), happy and unhappy couples resolve conflict in typically different ways, which can be understood as different *attributional patterns* (see Chapter 23). Happy couples use a *relationship-enhancing pattern,* while unhappy couples use a *distress-maintaining* (or *conflict-promoting*) *pattern.*

Causal attributions concern who or what produced an event, while *responsibility* attributions involves an assessment of who's accountable for the event once a cause is known. So, for example, the conflict-promoting attributional style shown in Figure 28.8 involves seeing the partner's negative behaviour as *intentional* ('you did it on purpose'), *selfish* ('you did it for what you could get out of it') and *blame* ('it's your fault') (Fincham, 2004).

According to Fincham, support for the attributional hypothesis accumulated during the 1990s. Indeed:

> ... the evidence for an association between attribution and marital satisfaction is overwhelming, making it possibly the most robust, replicable phenomenon in the study of marriage.

There's also increasing evidence that the causal link between attributions and marital satisfaction is *bidirectional*; in other words, they influence each other (Fincham, 2004). However, couples *don't* seem to have enduring attributional styles. Rather, their changing attributions over time predict their marital satisfaction, more than satisfaction predicts attributions (Karney & Bradbury, 2000).

Rule-breaking and deception

> ***ASK YOURSELF...***
> - What's the worst thing that a friend or partner could do as far as your relationship is concerned?
> - Is there anything that, *in principle,* you wouldn't tolerate?

Argyle & Henderson (1984) and Argyle *et al.* (1985) identified a number of rules thought to apply to all or most relationships, such as 'Should respect the other's privacy', 'Should not discuss what is said in confidence', 'Should be emotionally supportive'. There are additional rules for particular types of relationship. Relationships fall into clusters, with similar rules applying within a cluster. For example, one cluster includes spouse, siblings and close friends, and another includes doctor, teacher and boss.

Deception probably represents the most important rule that shouldn't be broken. Although what counts as deception will depend on the nature of the relationship, if you cannot trust your friend or partner, the relationship is almost certainly doomed.

Violation of expectations

As a relationship develops, partners learn more about each other and become increasingly close. This occurs through greater dependence on each other's activities for performance of the daily routines and fulfilment of plans and goals. As this happens, the number and strength of their *expectations* about each other increase. But, by the same token, the opportunities for *violation* of these expectations also increase. According to Berscheid & Ammazzalorso (2004):

> ... – when our partners turn out not to be the person we thought they were – we truly are endangered. The partner has become unfamiliar and thus, possibly unsafe. He or she becomes a stranger; hence, the word 'estranged' is often used to describe once close partners ... all of our customary behaviours and plans and goals that depend on the partner's behavioural contributions may be threatened.

Relationship dissolution as a process

Relationships are highly complex, and this applies to their break-up as much as it does to their formation and maintenance. It applies to the break-up of friendships and sexual relationships, and not just marriages, particularly if the relationship is a long-term one that has embraced many parts of the person's emotional, communicative, leisure and everyday life (Duck, 1988).

As we noted earlier, not all marriages involving young partners will break up while they're still young, so research needs to focus on the *processes* by which the lasting/non-lasting relationships may be distinguished (Gottman, 1994; Aldous, 1996). As Duck (1999) says:

> ... In accounting for break-up, therefore, we need to consider it as a long-term process in the lives of the partners and their associates ...

Also, people sometimes think about and plan their break-up, or maybe about how to prevent it: it doesn't always come at people 'out of the blue'. Recent research has begun to look more closely at the specific characteristics of those relationships that do break apart. What is it about the partners and their behaviour towards each other that accounts for their problems? For example, do troubled couples have particular ways of communicating and relating? (Duck, 1999). Researchers have also begun to look at the break-up of friendships, and the actions, strategies, and persuasive techniques people deliberately take to cause break-up. As Duck (1999) observes:

> ... Break-up is not just the waning of intimacy or reduction in feelings towards the partner ... the dissolution of relationships highlights the operation of relationship processes, such as interpersonal judgements, assessments of social exchange, and interactions that are present throughout a relationship but go unnoticed in routine interaction.

Duck's model

Duck's (1982) model comprises four phases, each of which is initiated when a threshold is broken.

The ending of a romantic relationship indicates that the two people are now legitimately available as partners for other relationships. This requires them to create a story for the end of the relationship that leaves them in a favourable light as potential partners. Romantic relationships are, therefore, typically ended publicly in a way that announces the ex-partners' freedom from the expectations of exclusive commitment.

Table 28.2 A sketch of the main phases of dissolving personal relationships (based on Duck, 1982, from Duck, 1988)

Breakdown–dissatisfaction with relationship
↓
Threshold: 'I can't stand this any more'
INTRAPSYCHIC PHASE
◎ Personal focus on partner's behaviour
◎ Assess adequacy of partner's role performance
◎ Depict and evaluate negative aspects of being in the relationship
◎ Consider costs of withdrawal
◎ Assess positive aspects of alternative relationships
◎ Face 'express/repress dilemma'
↓
Threshold: 'I'd be justified in withdrawing'
DYADIC PHASE
◎ Face 'confrontation/avoidance dilemma'
◎ Confront partner
◎ Negotiate in 'our relationship talks'
◎ Attempt repair and reconciliation?
◎ Assess joint costs of withdrawal or reduced intimacy
↓
Threshold: 'I mean it'
SOCIAL PHASE
◎ Negotiate post-dissolution state with partner
◎ Initiate gossip/discussion in social network
◎ Create publicly negotiable face-saving/blame-placing stories and accounts
◎ Consider and face up to implied social network effect, if any
◎ Call in intervention team
↓
Threshold: 'It's now inevitable'
GRAVE-DRESSING PHASE
◎ 'Getting over' activity
◎ Retrospective; reformative post-mortem attribution
◎ Public distribution of own version of break-up story

'Dressing the grave' involves 'erecting a tablet' that provides a credible, socially acceptable account of the life and death of the relationship. While helping to save face, it also serves to keep alive some memories and to 'justify' the original commitment to the ex-partner. As Duck (1988) puts it:

> ... Such stories are an integral and important part of the psychology of ending relationships ... By helping the person to get over the break-up they are immensely significant in preparing the person for future relationships as well as helping them out of old ones.

Duck (2001) identifies a number of classic formats for a break-up story (such as 'X suddenly changed and I had to get out'; 'X betrayed me'; 'We grew apart'). The crucial ingredients of such stories are those that show the speaker:

- is open to relationships but doesn't enter them thoughtlessly
- is aware of others' deficiencies but isn't overly critical
- is willing to work to improve a relationship or take decisive action when partners turn nasty or break the rules of relating
- is rational and sensible, and brings closure to relationships only after trauma, hard work or on reasonable grounds after real effort to make things work.

CONCLUSIONS: WHAT HAPPENS AFTER DIVORCE?

One growing area of research interest is 'postmarital' and 'remarital relationships', and family reorganisation after divorce. The increasing incidence of divorce is making blended families the norm. Indeed, there's shift in ideology, from viewing divorce as pathology to viewing it as an institution (Duck, 1999).

Once divorce is seen a common transition, rather than as pathological, researchers can reasonably begin to attend to a much wider range of issues, such as 'getting over' and prevention, and as much to the processes of entering new relationships as to those to do with leaving the old ones (Masheter, 1997: see Chapter 38).

Even the most stable and loving relationships, inevitably, dissolve. As Berscheid & Ammazzalorso (2004) say:

> ... It is one of the saddest facts of the human condition that even the closest and happiest of relationships end – if not by some circumstance of fate that causes separation, then by the death of one of the partners ...

The loss, through death, of a loved one is often accompanied by the experience of the strongest negative emotions of which human beings are capable.

CHAPTER SUMMARY

- The **need for affiliation** represents a precondition for attraction, and can be related to the need for **social comparison**. Both are enhanced under conditions of increased anxiety.

- Interpersonal relationships in western cultures tend to be **individualistic**, **voluntary** and **temporary**, whereas those in non-western cultures tend to be more **collectivist**, **involuntary** and **permanent**.
- Western psychologists tend to equate 'relationships' with 'western relationships'. This is a form of **ethnocentrism**, specifically, **Anglo-** or **Eurocentrism**.
- **Marriage** is found in all cultures. But there are important cultural variations in marital arrangements, including **monogamy**, **polygamy** (**polygyny** or **polyandry**), **mandatory marriage to specific relatives** and **arranged marriages**.
- Arranged marriages are far more common in collectivist cultures. But, even here, brides and grooms are typically given some **choice** about who they marry. Traditionally, **divorce rates** have been much lower among 'arranged couples', but these are now increasing.
- The focus on long-term heterosexual relationships has now been supplemented with discussion of **gay** and **lesbian** relationships.
- Up to the mid-1970s, psychological research into homosexuality adopted a 'pathology model'. This has been replaced by a model that emphasises the underlying **similarity** between homosexuals and heterosexuals. This approach, however, omits or distorts certain key **differences**, such as those relating to **cohabitation**, **sexual exclusivity** and **sex roles.**
- One of the most unexpected uses of the Internet is in the development of **online relationships** (**cyber affairs** or **electronic friendships**). These can be **purely virtual**, progress to increasingly sexually intense **online contact** or eventually lead to an **offline** meeting that is then maintained online.
- Berscheid and Walster distinguish between **companionate** ('true' or 'conjugal') **love** and **passionate** (romantic or obsessive) **love**. These are **qualitatively** different, but companionate love is only a more extreme form of **liking**.
- Sternberg's **triangular theory of love** comprises three basic components (**intimacy**, **passion** and **decision/commitment**), which can be combined to form different kinds of love.
- These models of love fail to take **cultural background** into account. They reflect the popular western ('Hollywood') view of the relationship between love and marriage, which *isn't* universal.
- An **evolutionary** account of love focuses on love as **attachment**. This is one of three meanings of 'I love you', the others being **love as caregiving** and **love as sexual attraction**.
- The notion of people falling in love is found in one form or another in most human societies, even where marriages are traditionally arranged by families or friends.
- Kerckhoff and Davis's '**filter model**', and other 'stage' theories, aren't strongly supported by empirical evidence. But it's generally agreed that relationships change and develop.
- A general theoretical framework for explaining **initial attraction** is that the presence of others must be **rewarding**. This can help explain the impact of **proximity**, **exposure** and **familiarity**, **physical attractiveness** and **similarity**.
- **Proximity** provides increased opportunity for interaction, which increases **familiarity** through the **mere exposure effect**. But people can become too familiar by invading our **personal space**. **Proxemic rules** dictate the appropriate distance to keep between ourselves and another person in different situations.
- **Similarity** of attitudes and values is a powerful influence on attraction, but this usually only emerges as the relationship develops. However, **physical attractiveness** is immediately apparent.
- There are important **cultural differences** in what counts as physical beauty, but there's a universal tendency for men to regard physical attractiveness as more important than women.
- The **matching hypothesis** (MH) is derived from **social exchange theory** (SET), which is a major explanation of all kinds of relationships, both intimate and non-intimate. Its different versions see people as fundamentally **selfish**, concerned only with getting as much out of a relationship as possible. But humans are capable of **altruism** as well as selfishness.
- SET is a special case of **equity theory** (ET), which adds **investment** to SET's **reward**, **cost** and **profit**. Equity refers to a **constant ratio** of profit to investment and relates to the concept of **fairness**.
- While there's little evidence for the **complementarity of psychological needs**, there's more support for complementarity in **resources**. But sociobiologists' claim that the universal male preference for physical attractiveness and female preference for financial security are genetically determined ignores cultural and historical factors.
- Marriages are more **unstable** if the couple are teenagers, from lower socio-economic groups and different demographic backgrounds, whose parents were divorced, who've been sexually active prior to marriage, and who experience early parenthood.
- **Conflict** is an inherent part of all relationships, and what's crucial is how constructively it's resolved. Happy couples tend to deal with conflict in a **relationship-enhancing way**, while unhappy couples use a **distress-maintaining pattern** of conflict resolution.
- **Rule-breaking** is a major cause of relationship breakdown, especially **deception**.
- Relationship breakdown is a **process**, involving a number of stages or phases. Research is increasingly concerned with the **aftermath** of relationship breakdown, especially divorce, and not just the breakdown itself.

Links with other topics/chapters

- Interpersonal attraction is really one aspect of *interpersonal* (or social) *perception* (Chapter 22).
- Affiliation can be understood in relation to *conformity,* especially the need to belong. We also compare ourselves with others when we're unsure what to do or think (Chapter 26).
- Ethnocentricism is a form of *bias* involved when western psychologists assume that 'relationships' and 'western relationships' are the same. Other examples of ethnocentrism are discussed in Chapter 47. That chapter also discusses cross-cultural and cultural psychology, and the differences between *cultures* (such as collectivist and individualist).
- Homosexuality is discussed in relation to definitions and classification of *psychological abnormality* in Chapter 43.
- Seeing love as a label we attach to our state of physiological arousal is consistent with the *cognitive labelling theory* of emotion discussed in Chapter 10.
- The view of romantic love as a discourse that represents a form of social control is consistent with *social constructionism* (Chapter 2).
- An evolutionary theory of love (love as attachment) is one aspect of *evolutionary psychology* (Chapter 2). Attachment is discussed fully in Chapter 32.
- The similarity-attraction principle is related to *consistency theories of attitude change* (including Heider's balance theory) (Chapter 24).
- The attractiveness stereotype is discussed, along with other aspects of *social perception,* in Chapter 22.
- Ideas about what makes people (especially women) physically attractive are relevant to discussion of eating disorders (Chapter 44).
- Analysing the factors that account for facial attractiveness is related to *facial perception* (including face recognition). This is discussed in relation to *pattern recognition* in Chapter 14.
- Sociobiological accounts of beauty are related to the *evolutionary approach* within psychology (Chapter 2). The tendency to equate beauty with youthfulness (as claimed by sociobiologists) is the flip-side of prejudice against old age (*ageism:* Chapter 39).
- The SET view of people as fundamentally selfish is relevant to discussion of *altruism and pro-social behaviour* (Chapter 30).
- Erikson's concept of intimacy is discussed as part of his *psychosocial theory* of development in Chapter 38.
- Marriage, divorce and parenthood are discussed in Chapter 37.
- Attribution is discussed in Chapter 23.
- Grief is discussed in relation to *old age* in Chapter 39.

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29

AGGRESSION AND ANTISOCIAL BEHAVIOUR



INTRODUCTION AND OVERVIEW

Philosophers and psychologists have been interested in human aggression for a long time. According to Hobbes (1651), people are naturally competitive and hostile, interested only in their own power and gaining advantage over others. Hobbes argued that to prevent conflict and mutual destruction, people need government.

This pessimistic view of human nature was shared by Freud and Lorenz, albeit for different theoretical reasons. Like McDougall, Freud and Lorenz saw aggression as an *instinct* (see Chapter 9). In Freud's psychoanalytic theory, aggression is inherently self-destructive, but in practice is directed outwards mainly at other people, demonstrated all too clearly in the carnage of war. According to Lorenz's *ethological theory,* human beings have lost the means of controlling their aggression that other species possess, and in addition have invented weapons that allow aggression to take place from a distance.

Other explanations of aggression have combined elements of instinct theories with those of *learning theory,* such as Dollard *et al.*'s *frustration–aggression hypothesis,* and Berkowitz's *aggressive-cue theory.* Bandura's study of *observational learning's* role in aggression stimulated research into the effects of violence in the media, in particular television, and, more recently, so-called 'video nasties'. Perhaps the 'purest' social psychological account of aggression is the theory of *deindividuation.*

Baron & Richardson (1994) define antisocial behaviours as those 'which show a lack of feeling and concern for the welfare of others'. While aggression represents just one such lack of feeling and concern, it's the one that psychologists have focused on. But aggression itself can take different forms, and can be linked to motives other than wishing to harm or injure another person.

DEFINING AGGRESSION

ASK YOURSELF...
- What do you understand by 'aggression'?
- Are there different kinds of aggression?
- Is aggression the same as violence?

We all seem to recognise aggression when we witness or encounter it, but defining it often proves much more difficult. When used as a noun, aggression usually conveys some behaviour which is intended to harm another (or at least which has that effect). Yet even this definition is too broad: self-defence and unprovoked attack may both involve similar 'acts' and degrees of aggression, but only the latter would normally be considered 'antisocial' (and the law also recognises this distinction). When used as an adjective, 'aggressive' can convey that an action is carried out with energy and persistence (Lloyd *et al.*, 1984), something which may be regarded as socially desirable.

The importance of intention

Moyer (1976) and Berkowitz (1993) see aggression as always involving behaviour, either physical or symbolic, performed with the intention of harming someone. Similarly, Fiske (2004) defines aggression as entailing 'any *behaviour* whose *proximate intention* is to harm another person'. Aggressive *thoughts,* without the behaviour, *aren't* aggressive. Bushman & Anderson (2001a) distinguish between two types of intention: *proximate* (the closest and most immediate) and *primary* (*ultimate*). Aggressors operate with *multiple motives.* For example, perpetrators of school shootings may have the primary intent of revenge, suicide or fame. Terrorist attacks may have various primary intentions, such as revenge, escalating tensions, genocide, political control, moral influence, personal salvation or publicity. Domestic abuse can be motivated by control, self-enhancement, and relief from tension. According to Fiske (2004):

> ... because people's motives are complex, focusing on the most immediate, closest, or proximate goal seems more fruitful than trying to decide the primary one.

Moyer and Berkowitz reserve the word violence to describe an extreme form of aggression involving a deliberate attempt to inflict serious physical injury on another person or damage property.

Other important distinctions include:

- *hostile aggression* is aimed solely at hurting another (gratuitous aggression or 'aggression for aggression's sake'); this would exclude self-defence; it's also angry, impulsive and automatic
- *instrumental aggression* is a means to an end (and so would include self-defence: Buss, 1961; Feshbach, 1964); it's controlled and premeditated.

ASK YOURSELF...
- Can you think of any exceptions to this distinction between hostile and instrumental aggression?

Hostile aggression can sometimes be controlled, as when an angry person plots revenge over time. Conversely, instrumental aggression can sometimes be impulsive, as when a child hits another child to get its toy back. Fiske (2004) believes that examples like these make the distinction less useful.

- *Natural* or *positive* aggression is aimed largely at self-defence, or combating prejudice and other social injustice.
- *Pathological aggression* or violence results when our inner nature has become twisted or frustrated (e.g. Maslow, 1968).

THEORIES OF AGGRESSION

Instinct theories

Lorenz's ethological approach

Ethologists consider aggression to be instinctive in all species and important in the evolutionary development of the species. It allows individuals to adapt to their environments, survive in them, and successfully reproduce (see Chapter 2 and Gross *et al.*, 2000). When space or

food are scarce, many species limit their reproduction and survive by marking off living space which they defend against 'trespassers' (*territoriality*). Aggressiveness is clearly important in competing successfully for limited resources, in defending territory and for basic survival.

According to Lorenz (1966), it's legitimate to make direct comparisons between different species, although his theory of human aggression is based on the study of non-primates, and mainly non-mammals (mainly fish and insects). He defines aggression as:

... the fighting instinct in beast and man which is directed against members of the same species ...

Differences between non-human and human aggression

According to Lorenz, aggression in non-humans is basically *constructive,* but in humans it's become *distorted.*

- *Ritualisation* refers to a way of discharging aggression in a fixed, stereotyped pattern. Fights between members of the same species result in relatively little physical harm to either victor or vanquished, but at the same time allow a victor to emerge. For example, the fighting that takes place between stags is highly ritualised, and the triumphant one is the male who 'makes his point' rather than the one who kills or incapacitates his opponent. Similarly, wolves will end their fight with the loser exposing its jugular vein – but this is sufficient and no blood is spilled.



- Sometimes, antagonists may approach each other in a threatening manner - but not actually engage in combat. One will show *appeasement rituals* (or *gestures*), which prevent the other from engaging in actual conflict. For example, in one species of jackdaw, the nape section at the bottom of the head is clearly marked off from the rest of the body by its plumage and colouring. When one bird 'offers' its nape to an aggressor, the latter will never attack, even if on the verge of doing so.

ASK YOURSELF...

- Can you think of any examples of human appeasement rituals/gestures?
- How effective do you consider these to be?

Although human appeasement responses (such as smiling, cowering, cringing, or begging for mercy) are normally very effective, we've developed a *technology* of aggression. However naturally aggressive we are as a species compared with other species, our superior brains have enabled us to construct weapons which remove combat from the eye-to-eye, face-to-face situation. This inevitably reduces the overall role – and effectiveness – of appeasement rituals. Indeed, the deadliest weapons (as measured by the number of victims who can be killed or injured at one time) are the very ones which can be used at the *greatest distance* from the intended victims (such as bombs and intercontinental nuclear missiles). According to Lea (1984):

We have developed a technology which enables our intentions to override our instincts.



A passenger train destroyed in a NATO missile attack in Serbia in April, 1999, during the Kosovo conflict. At least ten people were killed and 16 others injured

An evaluation of Lorenz's theory

- In keeping with his belief that humans are naturally highly aggressive, Lorenz maintains that their 'natural condition' is that of 'warrior'. However, it's generally agreed that early human beings *weren't* warriors but 'hunter–gatherers' (such as the present-day Inuit Eskimos, Pygmies of the Ituri forest, Aborigines, Kalahari Bushmen, the Punan of Borneo, and so on), who live in small clans which hardly ever come into contact with other groups of people (Siann, 1985).
- Even without the most primitive weapons, other primates, including chimps, can and do kill each other.

Goodall (1978) describes warfare between two colonies of chimps, which ended in the killing of every male in one of the groups. Also, infanticide is one of the more common kinds of unrestrained aggression among non-human species. For example, male lions that succeed in taking over a 'pride' of females (so displacing other adult males) will often attack and kill any cubs that are present (which then makes the females available for mating). According to Lea (1984), Lorenz's claim that non-human aggression always stops before an animal is killed is basically a myth.

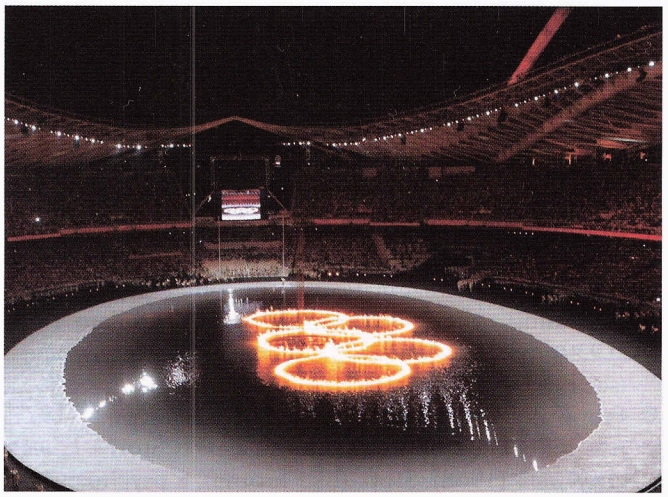
- Lorenz totally ignored the role of *learning* and *cultural influences,* which are far more important determinants of human aggression than biological factors. Whatever potential for aggression we may have inherited as a species, it's culturally overridden and repackaged into forms which fit current circumstances. Cultures differ in the degrees and kinds of aggression which are permissible, including gender-related aggression (see Chapter 36).
- Lorenz claims that aggression (like hunger, sexuality and flight, which collectively he calls the 'big four') isn't a response to environmental stimuli. Rather, it occurs spontaneously, when instinctive aggressive energy builds up and demands discharge (the *hydraulic model of instinct*). The evidence for this energy model is very sparse indeed (Siann, 1985), and many modern biologists and ethologists believe that aggression in animals is reactive and modifiable by a variety of internal and external conditions (Hinde, 1974).

Freud's psychoanalytic approach

As we saw in Chapter 9, Freud's theory is normally regarded as an *instinct theory.* It wasn't until late in his life that Freud recognised aggression as an instinct distinct from sexuality (libido). This change in his thinking occurred in response to the horrific carnage of the First World War. In *Beyond the Pleasure Principle* (1920) and *The Ego and the Id* (1923), he distinguished between the *life instinct* (or Eros), including sexuality, and the *death instinct* (*Thanatos*).

Thanatos represents an inborn destructiveness, directed primarily against *the self.* The aim (as with all instincts in Freud's view) is to reduce tension or excitation to a minimum and, ultimately, to eliminate it completely. This was the idyllic state we enjoyed in the womb, where our needs were met as soon as they arose, and, for a while, at our mother's breast. But after this, the only way of achieving such a *Nirvana* is through death.

Self-directed aggression, however, conflicts with the life instinct, especially the self-preservative component. But because the impulse to self-destruction is so strong, Freud believed that we must destroy some other thing or person if we're not to destroy ourselves. Conflict with the life instinct results in our aggression being *displaced* onto others. More positively, aggression can be *sublimated* into sport, physical occupations and domination and mastery of nature and the world in general. Like Freud, Lorenz also argued that we need to acknowledge our aggressiveness and to control it through sport (e.g. the Olympics), expeditions, explorations, and so on, especially if international cooperation is involved (Lorenz called these 'displacement' activities). Freud shared Lorenz's view that aggressive energy builds up until eventually it has to be discharged in some way.



Opening ceremony to the 2004 Athens Olympic Games

KEY STUDY 29.1 The overcontrolled violent criminal (Megargee, 1966)

- Megargee reported that brutally aggressive crimes are often committed by *overcontrolled* individuals. They repress their anger, and over a period of time the pressure to be aggressive builds up. Often it's an objectively trivial incident which provokes the destructive outburst. The aggressor then returns to his previously passive state, once again seeming incapable of violence.
- In Phoenix, an 11-year-old boy who stabbed his brother 34 times with a steak knife was described by all who knew him as being extremely polite and softly spoken, with no history of violent behaviour. In New York, an 18-year-old youth who confessed he'd assaulted and strangled a seven-year-old girl in a church, and later tried to burn her body in the furnace, was described in the press as an unemotional person who planned to be a minister. A 21-year-old man from Colorado accused of the rape and murder of two little girls had never been a discipline problem and, in fact, his stepfather reported, 'When he was in school the other kids would run all over him and he'd never fight back. There is just no violence in him.'
- In these cases, the homicide wasn't just one more aggressive offence in a person who'd always displayed

inadequate controls. Rather, it was a completely uncharacteristic act in a person who'd always displayed extraordinarily high levels of control. According to Megargee & Mendelsohn (1962):

... the extremely assaultive person is often a fairly mild-mannered, long-suffering individual who buries his resentment under rigid but brittle controls. Under certain circumstances he may lash out and release all his aggression in one, often disastrous, act. Afterwards he reverts to his usual overcontrolled defences. Thus he may be more of a menace than the verbally aggressive 'chip-on-the-shoulder' type who releases his aggression in small doses.

An evaluation of Freud's theory

- Despite supportive evidence such as Megargee's, Freud's ideas on aggression made little impact either on the public imagination or on other psychologists (including other psychoanalysts) until Dollard *et al.* (1939) proposed their *frustration–aggression hypothesis* (see below).
- Fromm's *The Anatomy of Human Destructiveness* (1977) was influenced by Freud's ideas, as was Storr's *Human Aggression* (1968). Storr (like Fromm, a psychoanalyst) dedicated his book to Lorenz, and in the introduction he says:

That man is an aggressive creature will hardly be disputed. With the exception of certain rodents, no other vertebrate habitually destroys members of his own species ... the extremes of 'brutal' behaviour are confined to man; and there is no parallel in nature to our savage treatment of each other ... we are the cruellest and most ruthless species that has ever walked the earth; and that, although we may recoil in horror when we read in newspaper or history book of the atrocities committed by man upon man, we know in our hearts that each one of us harbours within himself those same savage impulses which lead to murder, to torture and to war.

The frustration–aggression hypothesis (FAH)

Dollard *et al.*'s (1939) *frustration–aggression hypothesis* (FAH) was intended partly to 'translate' some of Freud's psychoanalytic concepts into learning theory terms. It claims that:

... aggression is always a consequence of frustration and, contrariwise ... the existence of frustration always leads to some form of aggression ...

While agreeing with Freud that aggression is an innate response, Dollard *et al.* argued that it would be triggered only by frustrating situations and events. Some support for this view comes from the *displacement* of aggression, as demonstrated in the *scapegoating* account of racial discrimination (see Chapter 25).

Indeed, evidence for this form of *indirect* aggression is stronger than for direct aggression (Fiske, 2004). A meta-analysis of laboratory studies found a sizeable effect of provocation on aggression towards innocent third parties when retaliation against the provoking person isn't possible (Marcus-Newhall *et al.*, 2000). Displaced aggression often focuses on a weaker, safer target than the frustrating agent. Related research into *bullying* and *partner abuse* shows that aggression towards others is an attempt to exert *control* over someone in a weaker position (Fiske, 2004).

ASK YOURSELF...

- Can you think of any exceptions to the claims made by the frustration–aggression hypothesis?
- Do we necessarily become aggressive when we're frustrated?

Some criticisms of the original FAH

Despite the evidence for displaced aggression, it soon became apparent that the FAH, in its original form, was an overstatement.

- Miller (1941) argued that frustration is an *instigator* of aggression, but situational factors (such as *learned inhibition* and *fear of retaliation*) may prevent actual aggressive behaviour from occurring. So, although frustration may make aggression more likely, it's far from being a sufficient cause of aggression.
- Bandura (1973) argued that frustration might be a source of *arousal,* but frustration-induced arousal (like other types of arousal) could have a variety of outcomes, of which aggression is only one. Whether it actually occurs is more the result of learned patterns of behaviour triggered by environmental cues.
- Frustration may also produce different responses in different people in different situations. For example, experiments seem to suggest that frustration is most likely to produce aggression if (a) the person is close to achieving his/her goal, or (b) the frustrating event seems arbitrary (Miell, 1990). Berkowitz (1993) says that if a frustration is either arbitrary or illegitimate, it's seen as unfair.

KEY STUDY 29.2 Don't frustrate me without a good reason (Kulik & Brown, 1979)

- Kulik and Brown found that frustration was more likely to produce aggression if it wasn't anticipated, and if participants believed that the person responsible for frustrating them did so deliberately and without good reason.
- This shows the importance of *cognitive factors* as cues for aggressive behaviour.
- Participants were told they could earn money by telephoning people and persuading them to make a pledge to charity. One group expected that about two-thirds of

those contacted would agree to make a pledge, while a second group expected a very low response rate. All the people telephoned were stooges, none of whom agreed to pledge.

- The first group of participants showed more aggression by slamming down the phone, speaking more aggressively, and so on. Also, those given reasonable excuses (such as 'I can't afford it') showed less aggression than those given less reasonable excuses (such as 'Charities are a waste of time and a rip-off').

The attributional perspective

ASK YOURSELF...

- How would you expect an attributional account of aggression to predict the conditions under which frustration is converted into aggression?

One of the important cognitive factors identified by Kulik & Brown is the *attribution of intention*. According to Berkowitz (1993), we aren't usually bothered by a failure to reach our goals unless we believe that the frustrater intentionally or improperly tried to interfere with our efforts. In other words, the attribution must involve a cause that's seen as *internal, controllable,* and *improper* (in violation of generally accepted rules of conduct). This is consistent with Weiner's (1986) attributional theory of emotion and motivation (see Chapter 23), and with the definition of aggression as the (perceived) intention to harm another person (see above). If there are *mitigating circumstances,* the cause may now be seen as *external* and *uncontrollable* (although still improper).

Chronically aggressive children appear to have a particular type of *attributional style.* They display a strong *hostile attributional bias* (HAB) towards seeing others as acting against them with hostile intent, especially in ambiguous situations (Nasby *et al.*, 1979). Such biased attributions often lead to *retaliatory aggression* (Taylor *et al.*, 1994).

Aggressive children make attributions rapidly and based on only some of the relevant information relating to perceived threat (Dodge & Tomlin, 1987). This suggests a state of chronic arousal and vigilance that other people experience only sporadically. The phenomenon of *excitation transfer* describes how arousal from an irrelevant prior source persists and then spills over into the next (unrelated) setting to which it's then *misattributed* (Zillman, 1988: see below). HAB also highlights the *social construction* of aggression (Mummendey, 1996: see below).

Larger frustrations may facilitate aggression because they're more likely to trigger a (perhaps biased) search for an explanation favouring a *dispositional attribution* about the frustrater. The presence of *aggressive cues* is also more likely to trigger hostile attributions (Fiske, 2004).

Aggressive-cue theory (ACT)

According to Berkowitz (1966), frustration produces *anger* rather than aggression. Frustration is psychologically painful, and anything which is psychologically (or physically) painful can lead to aggression. According to *aggressive-cue* (or *cue–arousal*) *theory* (ACT), for anger/psychological pain to be converted into actual aggression, certain cues are needed. These are environmental stimuli associated either with aggressive behaviour, or with the frustrating object or person.

Aggressive or violent behaviour is, at least partly, a reaction to specific features of the surrounding situation which 'pull out' responses that heighten the strength of the behaviour. This happens either when the environmental cues are associated in the aggressor's mind with aggression, and/or when they somehow remind the aggressor of decidedly unpleasant experiences.

Box 29.1 Berkowitz's paradigm for investigating cue-related aggression

- When participants arrive, they're told they'll be paired with another person (a stooge) in a study concerned with the physiological reactions to stress.
- To do this, they'll be asked to offer a written solution to a problem. Stress will be introduced by their solution being evaluated by their partner, who will deliver between one and ten electric shocks to them (according to his/her evaluation of the solution).
- After completing their solutions, half the participants receive a single shock, while the rest receive seven (all fairly mild), the lower number of shocks indicating a very favourable evaluation.
- Following this first stage, participants take their turn in evaluating the stooge's solution, either after seeing a violent film (*Champion,* depicting a brutal prize fight and starring Kirk Douglas), or a non-violent film (showing highlights of an exciting track race), or in the presence of objects that are/aren't associated with violence. Aggression is measured as the number of shocks the participant delivers.

Experimental tests of ACT

Berkowitz & Geen (1966) introduced the stooge to the real participant as either Bob Anderson or Kirk Anderson. As expected, the largest number of shocks was delivered by participants who were angry (had received seven shocks from the confederate), had witnessed the violent film, and believed the confederate's name was Kirk (his name was linked to the witnessed aggression through Kirk Douglas).

In a parallel experiment, the stooge was introduced either as Bob Kelly, Bob Dunne or Bob Riley: Dunne was the name of the victorious character in *Champion,* and Kelly (played by Kirk Douglas) was the loser. As predicted, the stooge received more shocks from participants who'd

seen the violent film, but most importantly, he received most shocks when he was called Kelly.

> ***ASK YOURSELF...***
> • Try to account for these findings.

In both cases (the stooge called 'Kirk' or 'Kelly' receiving the most shocks), participants encountered someone who reminded them of the victim in the witnessed aggression. He was associated with an instance of successful (i.e. rewarded) aggression, which made it more likely that anger would be converted into aggression (Berkowitz, 1993).

Berkowitz & LePage's (1967) participants were taken to a 'control room' and shown the shock apparatus. For some, there was a shotgun and a revolver on a table next to the shock apparatus, while for others there were badminton rackets and some shuttlecocks. For each participant, these objects were pushed aside by the experimenter, who said that 'they must have been left there by another experimenter'. There was a third group for whom there were no 'planted' objects. As predicted, angry participants delivered more shocks to the stooge if a shotgun and revolver were nearby (objects that, for most people, are associated with violence) than when badminton rackets were present. This is known as the *weapons effect* (see Figure 29.1).

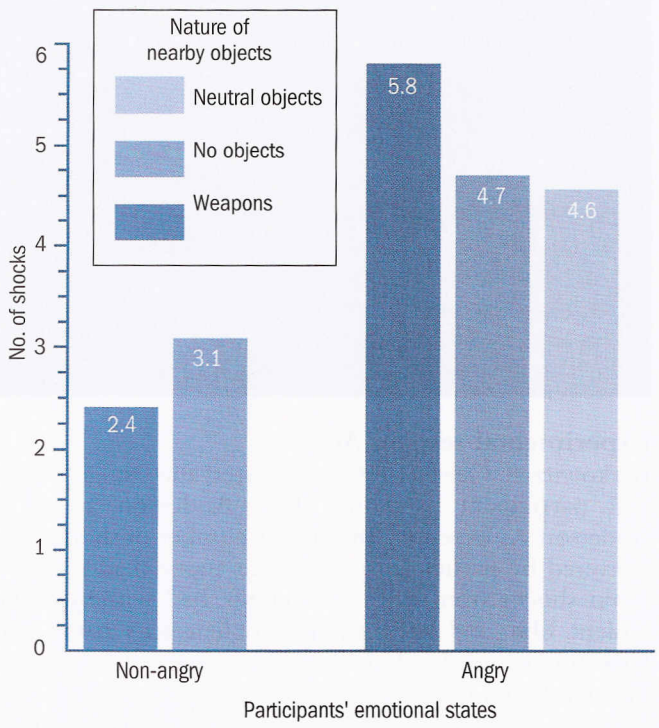


Figure 29.1 Mean number of shocks given as a function of presence of weapons (adapted from Berkowitz & LePage, 1967). (Copyright 1967 by the American Psychological Association. Adapted by permission)

An evaluation of ACT

- These and several other similar studies seem to suggest that people's actions towards others are sometimes influenced in a relatively thoughtless, automatic way by particular details of the immediate situation. The mere physical presence of weapons, even when not used in the performance of aggressive actions, may still increase the occurrence of such behaviour. As Berkowitz (1968) put it:

> Guns not only permit violence, they can stimulate it as well. The finger pulls the trigger, but the trigger may also be pulling the finger ...

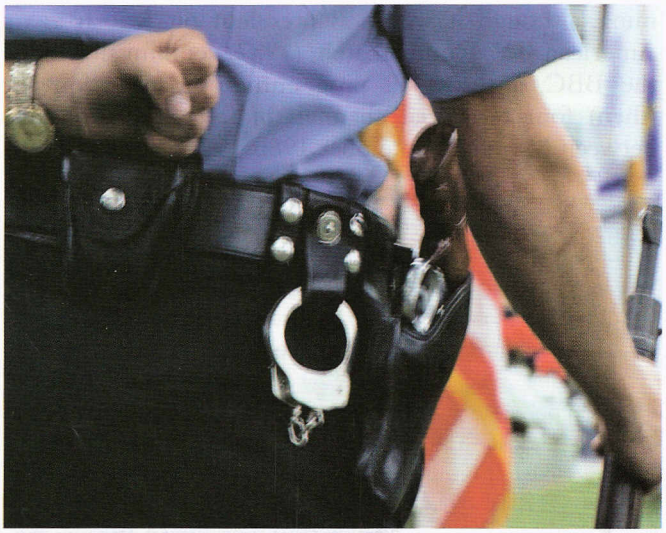
- Exposure to a weapon produces *automatic priming* (Anderson *et al.*, 1998). For example, people can identify aggression-related words faster after seeing a weapon name or picture. This suggests that weapons make aggressive thoughts more accessible. Violent media can do the same: after seeing a violent video, people list more aggressive associations to both ambiguous and non-aggressive words, as well as identifying aggressive words faster (Bushman, 1998).
- Consistent with both ACT and the weapons effect is the correlation between the availability of firearms and firearms homicide rates, both in the USA and across 16 European countries. Not only do guns make aggression more lethal when they are involved (hardly surprising), but, more surprisingly:

> ... guns also provoke aggression in their own right, simply by being there ... (Fiske, 2004)

- Apart from some failures to replicate these findings, critics have argued that participants disregarded the explanation of what the weapons and other 'props' were doing there, and realised that the experimenter expected them to be aggressive. In other words, they were responding to the *demand characteristics* of the experimental situation (see Chapter 3).
- But Berkowitz (1993) cites a study in which the more that participants believed the experimenter was interested in their aggressive responses, the *less* punitive they were towards the stooge. So, it could be that in the original Berkowitz and LePage study, the increased aggression produced by exposure to weapons occurred *despite* participants' suspicions, *not* because of their beliefs about what the experimenter expected to happen.
- Berkowitz (1995) points to a number of successful replications, including studies carried out in Belgium, Canada, Croatia, Italy and Sweden. In the Swedish study (Frodi, 1975), the weapons effect was shown by high-school boys even when they hadn't been 'angered' (i.e. shocked). According to Baron (1977):

> It is clear that Berkowitz's more general proposal that aggression is 'pulled' or elicited from without by external stimuli rather than merely 'pushed' from within has attained

widespread acceptance ... his views in this regard have been highly influential in causing social psychologists to shift their search for the determinants of aggression largely from internal conflict and motives to external environmental factors ...



Gun culture creates gun crime

Zillman's excitation-transfer theory (ETT)

According to Zillman (1982), arousal from one source can be transferred to, and energise, some other response. This is because arousal takes time to dissipate. When we're aroused, aggression may be heightened if:

- the aroused person has some disposition to react aggressively, and
- the arousal is incorrectly attributed to the aggression-provoking event rather than to the correct source.

In one test of this, Zillman and Bryant (1974) created states of arousal in participants by requiring them to ride bicycles. In some, high levels of arousal were induced, while in others low levels were induced. Participants then played a game during which they were verbally insulted by a stooge. When participants were later given the opportunity to deliver a harsh noise in headphones worn by the stooge, significantly more noise was delivered by highly aroused participants.

Box 29.2 Excitation transfer and sexual arousal

- Excitation-transfer theorists have been particularly interested in the relationship between sexual arousal and aggression (Zillman & Bryant, 1984). But the data are inconsistent.
- 'Soft' pornography apparently either decreases or has no effect on aggression, whereas 'hard-core' pornography can lead to an increase in aggressive behaviour (Donnerstein *et al.*, 1987).
- Also, sexual excitement, combined with aggressive behaviour in the sexually arousing material, has been shown to produce an increase in aggression (Donnerstein & Berkowitz, 1981).

ETT sees the relationship between arousal and aggression as a *sequence,* in which arousal is generated and then, depending on its perceived causes, labelled, producing a specific emotion such as anger (Mummendey, 1996). Berkowitz (1990), however, disputes the existence of 'unspecific' or 'neutral' arousal. According to his *cognitive–neo-associationistic approach,* anger and aggression are *parallel* rather than sequential processes, because aversive events automatically lead to the instigation of aggression, depending on what situational cues are present (Mummendey, 1996).

The social learning theory approach and media violence

Social learning theory (SLT)

According to *social learning theory* (SLT), aggressive behaviours are learned through reinforcement and the imitation of aggressive 'models' (Bandura, 1965, 1973, 1994: see Chapters 35 and 42).

Imitation is the reproduction of learning through observation (*observational learning*), and involves observing other people who serve as models for behaviour. Bandura *et al.* (1961, 1963) demonstrated how a child's aggressive tendencies can be strengthened through *vicarious reinforcement* (seeing others being rewarded for behaving aggressively).

Box 29.3 Bandura *et al.*'s procedure for investigating the effects of observed aggression

- Three-, four- and five-year-old children were exposed to an adult model behaving aggressively towards an inflated plastic 'Bobo' doll. Later, the children were allowed to play with the doll themselves. The number of acts of *imitative aggression* was the main dependent variable.
- Bandura made the important distinction between *learning* and *performance:* learning of aggressive responses (*acquisition*) doesn't necessarily mean that they'll be displayed in the child's behaviour (*performance*). In other words, a failure to imitate doesn't imply the absence of learning.
- For example, Bandura (1965) showed that when children who'd seen the model being punished for his behaviour were themselves offered *rewards* for behaving aggressively, they showed they'd learned the model's behaviours just as well as those who saw the behaviours being positively reinforced (see Key Study 35.3, page 616).

SLT and the effects of the media

SLT has contributed to our understanding of the role played by the media in both pro- (see Chapter 30) and antisocial behaviour. According to Baron (1977), the Bobo doll experiments constitute the 'first generation' (or 'phase one') of scientific research into the effects of media violence: almost all involved filmed (*symbolic*) models. The basic finding was that young children can acquire new aggressive responses not previously in their behavioural repertoire, merely through exposure to a filmed or televised model. If children could learn new ways of harming others through such experience, then mass-media portrayals of violence might be contributing, in some degree, to increased levels of violence in society (Baron, 1977).

However, Bandura himself (1965) warned against such an interpretation in the light of his distinction between learning and performance. Nevertheless, the mere *possibility* of such effects was sufficient to focus considerable public attention on his research.

There were also several methodological problems with the Bobo doll research, which made it very difficult to generalise from it to 'real world' media influence. This helped to promote 'phase two' of the study of the effects of media violence, with Berkowitz being one of the leading figures.

How much violence is there on television?

ASK YOURSELF...

- Do you believe there's a lot of violence portrayed on terrestrial TV?
- How might you measure this?
- Try to estimate the average number of violent acts (a) per programme, and (b) per hour.

The basic method of quantifying the amount of violence shown on TV involves simple counting techniques. Researchers define violence objectively, and then code samples of TV programmes for incidents matching those definitions.

Gerbner and his colleagues (Gerbner, 1972; Gerbner *et al.*, 1980, 1986; Gerbner & Gross, 1976) monitored samples of all major network prime-time and weekend daytime programmes since 1967. They defined violence as:

> ... the overt expression of physical force (with or without a weapon) against self or other, compelling action against one's will on pain of being hurt or killed, or actually hurting or killing ...

Since 1967, the percentage of TV programmes containing violent episodes has remained fairly constant, but the number of violent incidents per programme has gradually increased. In 1986, there was an average of five violent acts per hour on prime-time TV. This figure rose to 20 on children's weekend programmes (mainly cartoons).

Gerbner's analysis provided the framework for British research initiated by Halloran & Croll (1972) and the BBC's Audience Research Department. Both studies found that violence was a common feature of programming, although it wasn't as prevalent on British as on American TV. Cumberbatch (1987), commissioned by the BBC, analysed all programmes broadcast on the (then) four terrestrial channels in four separate weeks between May and September 1986.

KEY STUDY 29.3 How much violence is there on British TV? (Cumberbatch, 1987)

- Cumberbatch found that 30 per cent of programmes contained some violence, the overall frequency being 1.14 violent acts per programme and 1.68 violent acts per hour.
- Each act lasted around 25 seconds, so violence occupied just over 1 per cent of total TV time. These figures were lower if boxing and wrestling were excluded, but higher (at 1.96 violent acts per hour) if verbal threats were included.
- Perpetrators of violent acts were much more likely to be portrayed as 'baddies' than 'goodies', and violence occurred twice as frequently in law-breaking than in law-upholding contexts.

Although violence, and concerns about it, had increased in society in the decade up to 1987, this wasn't reflected by a proportional increase on TV, even in news broadcasts (Cumberbatch, 1987)

More recently, the BBC and ITV commissioned Gunter & Harrison (1998) to look at the frequency of violence on terrestrial and satellite channels.

KEY STUDY 29.4 Violence on British TV (Gunter & Harrison, 1998)

Gunter and Harrison monitored 2084 programmes on eight channels over four weeks in October 1994 and January/February 1995. The findings include that:

- on BBC 1 and 2, ITV and Channel 4, 28 per cent of programmes contained violent acts, compared with 52 per cent on Sky One, UK Gold, Sky Movies, and the Movie Channel
- violence occupied 0.61 per cent of time on the terrestrial channels and 1.53 per cent on the satellite stations
- the greatest proportion of violent acts (70 per cent) occurred in dramas and films; 19 per cent occurred in children's programmes
- most violent acts occurred in contemporary settings in inner-city locations; the majority of perpetrators were young, white males

- 1 per cent of programmes contained 19 per cent of all violent acts. *Double Impact*, shown on the Movie Channel, for example, contained 105 violent acts, as against an average of 9.7
- the USA was the most common location for violence (47 per cent), followed by the UK (12 per cent). The third most likely location was a cartoon setting (7 per cent), and then science fiction locations (4 per cent).



John Travolta and Samuel L. Jackson in *Pulp Fiction* (1994)

Gunter and Harrison (in Frean, 1995) concluded that:

> The picture that emerges is not one of a television system permeated by violence, but rather one in which violence represents only a tiny part of the output and where it tends to be concentrated principally in a relatively small number of programmes ...

An almost identical conclusion was reached by the American Academy of Paediatrics (Murray & Whitworth, 1999).

As well as TV, violent behaviour can also be seen at the cinema or on video (and what's shown may or may not be subsequently screened on TV). Evidence indicates that a large percentage of 9–11-year-olds have watched 18-rated videos, including the particularly violent *Nightmare on Elm Street, The Silence of the Lambs*, and *Pulp Fiction* (Ball & Nuki, 1996; Wark & Ball, 1996).

How much TV do people watch?

American research conducted since 1965 suggests that the time spent in a typical household in front of the TV has, in general, been steadily increasing (Burger, 1982; Liebert & Sprafkin, 1988). However, these data are typically derived from paper-and-pen surveys concerning viewing habits and may not be reliable.

Anderson *et al.* (1986) installed automated time-lapse video-recording equipment in the homes of 99 families consisting of 462 people aged between one and 62. The recordings began when the TV was switched on and stopped when it was switched off. One camera used a wide-angled lens to record people's behaviour in the room where the TV was, while a second focused on the TV screen itself. Two of their main findings were (a) no one actually watches the TV for more than 75 per cent of the time it's on, and (b) the number of hours spent looking at TV increases up to the age of 10, after which it decreases, levels off at about age 17, and continues around the same level (10 hours per week) into adulthood.

How do viewers perceive violence?

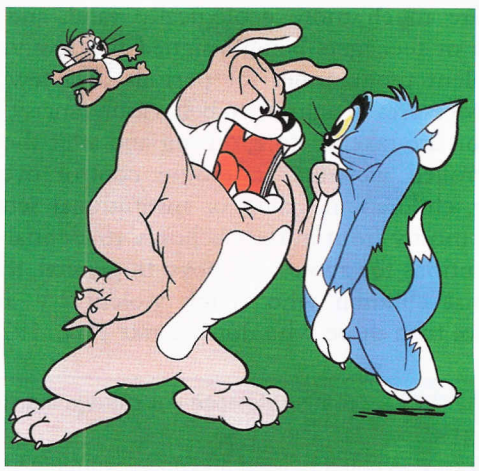
According to Gunter & McAleer (1997), viewers can be highly discriminating when it comes to portrayals of violence, and don't invariably read into TV content the same meanings researchers do. Thus, merely knowing how often certain pre-defined incidents occur in programmes doesn't tell us how significant these features are for viewers.

Viewers' perceptions of how violent TV content is, then, may not agree with objective counts of violence in programmes. According to Gunter (2000), the potential for emotional upset is increased:

- by violent portrayals in realistic settings – real-life incidents in news and documentary programmes are generally rated as being more violent than those in fictional settings
- when the violence is depicted as justified or rewarded
- when viewers strongly identify with the characters
- when the victim's pain and suffering are shown graphically.

Very young children are frightened by monsters they can see on the screen (such as *The Incredible Hulk*), while older children (9–12-year-olds) are scared by hidden evils in disguise or that lurk unseen off-camera (as in *Poltergeist*, where much of the 'horror' is covert and depends on a more sophisticated reading of story events: Gunter, 2000).

Programmes which are extremely violent according to 'objective' counts of violent acts can be seen by children as 'containing hardly any violence', and this is especially



Tom and Jerry – and friend. Evidence suggests that children see such cartoons as less violent than more realistic portrayals

true of cartoons. Subjective assessment of violence should, therefore, be incorporated into assessments of the amount of violence shown on TV (Gunter & McAleer, 1997).

Methods used to study TV violence

Correlational studies

Typically, these involve asking people which programmes they like best and which they watch most often. These data are then correlated with measures of aggression given by parents, teachers, peers, self-reports, and so on. Evidence from such studies has generally been inconsistent, but the overall amount of viewing is related to self-reports of aggressive behaviour. Of course, it's possible that those who watch violent TV are different in some way from those who don't, and the impossibility of inferring cause and effect from correlational studies weakens this methodology.

Laboratory studies

These are designed to enable the causal link between watching violent TV and behaving aggressively to be established (if it exists). Liebert & Baron (1972) randomly assigned children to two groups. One group watched *The Untouchables,* a violent TV programme, while the other watched an equally engaging and arousing, but non-violent, sports competition. Afterwards, the children were allowed to play. Those who'd watched the violent programme behaved more aggressively than the others.

The problem with laboratory studies is that most use small and unrepresentative samples which are exposed to the independent variable under highly contrived and unnatural viewing conditions. The measures of TV viewing and aggression tend to be so far removed from normal everyday behaviour that it's doubtful whether such studies have any relevance to the real world (Gunter & McAleer, 1997).

Field experiments

These are much more ecologically valid, and involve children or teenagers being assigned to view violent or non-violent programmes for periods of a few days or weeks. Measures of aggressive behaviour, fantasy, attitude, and so on are taken before, during and after the periods of controlled viewing. To ensure control over actual viewing, children in group or institutional settings are studied, mostly from nursery schools, residential schools, or institutions for adolescent boys. In general, the results show that children who watch violent TV are more aggressive than those who don't (Parke *et al.*, 1977).

KEY STUDY 29.5 Creating violence – a cottage industry? (Parke *et al.*, 1977)

- Parke *et al.* studied Belgian and American male juvenile delinquents living in small-group cottages in low-security institutions.
- Their normal rates of aggressive behaviour were assessed (using several measures of physical and verbal aggression).
- Then the boys in one cottage were exposed to five commercial films involving violence over a period of one week, while boys in another cottage saw five non-violent films during the same period.
- The former showed significant increases in aggressive behaviour for some of the categories, but increases in other measures of aggression were confined to boys who were naturally high in aggression (and who saw the violent film).

ASK YOURSELF...

- What do you consider to be the major *disadvantage* of field experiments compared with laboratory experiments?
- What particular limitations did the Parke *et al.* study have?

In field experiments, the setting cannot be controlled as well as in laboratory experiments. Consequently, we cannot be certain that the only difference between the children is the watching of either violent or non-violent TV, especially when participants aren't assigned randomly to conditions. In Parke *et al.*'s study, for example, 'cottages' (or pre-existing groups), rather than individuals, were assigned to the viewing conditions. Also, their participants (juvenile delinquent males) aren't representative of children or adolescents in general.

Natural experiments

Here, the researcher doesn't manipulate an independent variable, but takes advantage of fortuitous and naturally occurring events. Williams (1986) studied a community in Canada ('Notel'), where TV had only recently been introduced. This community was compared with one in which there was a single TV channel, and another with several channels. Verbal and physical aggression in both male and female 6–11-year-olds increased over a two-year period following the introduction of TV to 'Notel'. No such increase occurred in the communities that already had TV.

KEY STUDY 29.6 A natural experiment on the island of St Helena

- In July 1994, a study began to look at the effects of the introduction of TV to St Helena. This remote island in the south-east Atlantic has fewer than 6000 inhabitants, none of whom had ever seen live TV.
- Of its 9–12-year-olds, only 3.4 per cent had behavioural problems – the lowest ever recorded for any age range anywhere in the world. This compared with 14 per cent of children in London. Of the three- to four-year-olds, fewer

than 7 per cent had behavioural problems, compared with 12 per cent in London.

- Prior to the introduction of several 24-hour channels (including BBC World Television, MNET [a South African commercial service], and the American satellite channel, CNN), the only access the islanders had to news was on short-wave radio from the BBC World Service. While the island has three video libraries, it doesn't have a cinema.
- The study's leader, Tony Charlton, looked at the effects of the introduction of TV on 59 pre-school children, who will be monitored until they're 13, and all 800 children on the island who are of first- and middle-school age. According to Charlton:

  The children on the island represent a unique control group – it is extraordinarily difficult to find a group that doesn't have television.

- Before the study began, Charlton noted that:

  It could be that excessive viewing interferes with the development of social skills and mental capacities which children need to acquire. But there could be enormous educational benefits.

- In the fourth year of the seven-year study, prosocial behaviour (defined as helping others and playing amicably: see Chapter 30) hadn't only been maintained, but actually improved slightly.

(Based on Cooper, 1994; McIlroy, 1994; Frean, 1994; Lee, 1996; Midgley, 1998)

Longitudinal panel studies

Like experiments, but unlike correlational studies, longitudinal panel studies can say something about cause and effect, and normally use representative samples. In this case, their aim is to discover relationships that may exist or develop over time between TV viewing and behaviour. These studies, then, look at TV's cumulative influence and whether or not attitudes and behaviour are linked with watching it.

American (e.g. Lefkowitz *et al.*, 1972; Eron & Huesmann, 1985; Phillips, 1986) and British research (e.g. Sims & Gray, 1993; Bailey, 1993) shows that such a link exists. Sims and Gray, for example, reviewed an extensive body of literature linking heavy exposure to media violence and subsequent aggressive behaviour. Similarly, Bailey's study of 40 adolescent murderers and 200 young sex offenders showed repeated viewing of violent and pornographic videos to be 'a significant causal factor'. This was particularly important in adolescents who carried out abusive behaviour while they were babysitting, where videos provided 'a potential source of immediate arousal for the subsequent act', including imitating violent images.

However, some studies have failed to find such a link. Milavsky *et al.* (1982) found only small associations between exposure to violent programmes and verbal and physical aggression amongst 3200 elementary school children and adolescents. Variables such as family background, social environment, and school performance were actually much better predictors of aggressiveness, if not of actual crime (Ford, 1998).

How does television exert its effects?

Four specific effects of TV violence have been investigated. These are *arousal, disinhibition, imitation* and *desensitisation.*

- *Arousal* is a non-specific, physiological response, whose 'meaning' is defined by the viewer in terms of the type of programme being watched (Zillman, 1978). Watching TV violence increases a viewer's overall level of emotional arousal and excitement (Berkowitz, 1993). Although there doesn't seem to be any strong overall relationship between perceiving a programme as violent and verbal or physiological reports of emotional arousal (Gadow & Sprafkin, 1993; Bryant & Zillman, 1994), the more *realistic* the violence is perceived to be, the greater the reported arousal and involvement (see above, page 503).
- *Disinhibition* is the reduction of inhibitions about behaving aggressively oneself, or coming to believe that aggression is a permitted or legitimate way of solving problems or attaining goals. This relates to Berkowitz's ACT (see above).
- *Imitation* is perhaps the most direct link between watching TV and the viewer's own behaviour, and relates to Bandura's studies of imitative aggression (see page 501). However, SL theorists acknowledge the role of *cognitive factors* as mediating between stimulus and response (Bandura, 1994). How TV violence is perceived and interpreted, and the issue of realism, are clearly important *intervening variables* for both children and adults (see Box 35.7, page 617).
- *Desensitisation* is the reduction in emotional response to TV violence (and an increased acceptance of violence in real life) as a result of repeatedly viewing it. Increasingly violent programmes may be required to produce an emotional response (Gadow & Sprafkin, 1989). A study by Drabman & Thomas (1974) supports the desensitisation hypothesis. Eight-year-olds saw either a violent or a non-violent programme before witnessing a 'real' (staged) fight between two other children in a playroom. The former were less likely to tell an adult what was happening than the latter.

Reconsidering media violence

The debate about the relationship between media violence and aggression goes on. At the trial of the two boys accused of murdering two-year-old James Bulger in

February, 1993, the trial judge, Mr Justice Moreland (in Cumberbatch, 1997), said:

> It is not for me to pass judgement on their upbringing, but I suspect that exposure to violent video films may, in part, be an explanation ...

The call for legislation controlling the supply of videos to children was supported by many psychologists, including Newson (1994), whose report (*Video Violence and the Protection of Children*) was also endorsed by many psychiatrists and paediatricians.

Cumberbatch (1997), however, has questioned the validity of the evidence on which Newson's report was based. While it might be true that the father of one of the boys had rented the video *Child's Play 3* some weeks before the murder occurred (as one British tabloid claimed), his son wasn't living with him at the time, disliked horror films, and was upset by violence in videos. Similarly, it was claimed that the massacre of 16 people in Hungerford in 1987 was inspired by the murderer seeing the character 'Rambo' in the film *First Blood*. In fact, there's no evidence to support this claim (Cumberbatch, 1997).

More recently, two 14-year-old British schoolboys were convicted of attempted murder, apparently as a result of watching the film *Scream*. In the film, college students became victims of fatal knife attacks by two of their classmates. At their trial, though, the schoolboys denied that the film had influenced their behaviour (Stokes, 1999).

Cumberbatch has also criticised Comstock & Paik's (1991) conclusion that, based on Huesmann & Eron's (1986) cross-national survey in six countries (Holland, Australia, USA, Israel, Poland and Finland), viewing TV violence at an early age is a predictor of later aggression.

Box 29.4 Criticisms of the claim that viewing TV violence at an early age is a predictor of later aggression

- The Dutch researchers concluded that their results showed no effects of TV, and refused to allow their findings to be included in Huesmann and Eron's edited book of the research study.
- The Australian research showed *no* significant correlations between early TV violence viewing and later aggression.
- The American study found that when initial aggression was controlled for, the correlation between early TV viewing and later aggression was significant only in girls.
- Israeli researchers found significant effects in their city samples, but not in their kibbutz samples.
- In Poland, the researchers agreed that a greater preference for violent viewing was predictive of later aggression, but that 'the effects are not large and must be treated cautiously'.
- The Finnish researchers appeared to misunderstand their own data. Rather than showing a positive correlation between viewing violent TV and aggressive behaviour, the correlation was actually *negative*, indicating that the more TV is watched, the *less aggressive* children were later.

(Adapted from Cumberbatch, 1997)

Cumberbatch cites several other studies, which also cast doubt on claims about the connection between media violence and aggression in children.

According to Taylor *et al.* (1994):

> ... media violence is not a sufficient condition to produce aggressive behaviour, nor is it a necessary one. Aggressive behaviour is multiply determined and media violence in and of itself is unlikely to provoke such behaviour ... However ... media violence can be a contributing factor to some aggressive acts in some individuals ....

Others, however, disagree. For example, Fiske (2004) believes that:

> Research unequivocally demonstrates that media violence facilitates aggression ... review after review supports the conclusion ... The link of violent media to aggression is one of the most reliable findings in social psychology ...

Bushman & Anderson (2001b) argue that the evidence for a link is almost as strong as that between smoking and cancer, and even stronger than that between condom use and HIV prevention.

Deindividuation

ASK YOURSELF...

- Do you think people are more likely to behave in antisocial ways in a group or crowd than when they're alone?
- If so, why?

The concept of *deindividuation* has been used to try to explain why people in groups may behave in an uncharacteristically aggressive way (and in other antisocial ways), compared with their individual behaviour. When an individual's identity is lost in a mass of people, and when the markers of personality are reduced, the individual is said to be *deindividuated* (Gergen & Gergen, 1981).

Festinger *et al.* (1952) first introduced the concept of deindividuation, based on Le Bon's (1895) study of the aggressive behaviour sometimes associated with crowds. They defined deindividuation as a state of affairs in a group where members don't pay attention to other individuals as individuals and, correspondingly, the members don't feel they're being singled out by others. Belonging to a group not only provides people with a sense of identity and *belongingness* (see Maslow's hierarchy of needs – Chapter 9), but allows individuals to merge with the group, to forego individuality, and to become *anonymous*.

Empirical studies of deindividuation

While most relevant studies have been laboratory experiments, Diener *et al.* (1976) observed 1300 trick-or-treating children on Halloween night. When they wore costumes which prevented them from being recognised and went from house to house in large groups, they were more likely to steal money and candy.

Zimbardo (1969) regarded anonymity as a major source of deindividuation, and was the first to operationalise *anonymity* by having participants wear hoods and masks.

KEY STUDY 29.7 Anonymity can be bad for your health (Zimbardo, 1969)

- Female students had to deliver electric shocks to another student 'as an aid to learning'.
- Half wore bulky lab coats and hoods that hid their faces, were spoken to in groups of four, and were never referred to by name.
- The other half wore their normal clothes, were given large name tabs to wear, were introduced to each other by name, and could see each other dimly while giving the shock.
- The student who received the shock was seen through a one-way mirror and pretended to be in extreme discomfort – writhing, twisting, grimacing, and finally tearing her hand away from the strap.
- The hooded, deindividuated participants gave twice as much shock as the individuated group. If they were told that the student receiving the shock was honest, sincere and warm, she didn't receive any less shock than those believed to be conceited or critical.
- By contrast, the individuated participants *did* adjust the shock they delivered according to the victim's character.



Deindividuated participants in Zimbardo's (1969) experiment

An evaluation of deindividuation research

Manipulating anonymity hasn't always proved very easy (Brown, 1985). The participants in Zimbardo's (1969) study wore clothing resembling that worn by the Ku Klux Klan (see page 423). This uniform may have acted as a *demand characteristic* (see Chapter 3): the participants believed they should behave in a more extreme way (Johnson & Downing, 1979). In support of this, Johnson and Downing found that when participants wore surgical masks and gowns, they delivered significantly *less* electric shock than those participants whose names and identities were emphasised. This suggests that the participants' clothing and related behavioural expectations, rather than deindividuation, may have influenced their behaviour.

Similarly, in another of Zimbardo's (1969) studies, the participants were Belgian soldiers. When these soldiers wore hoods, they didn't behave more aggressively. Instead, they became self-conscious, suspicious and anxious. Their apparently individuated counterparts, who wore army-issue uniform, retained their 'normal' level of deindividuation resulting from their status as uniformed soldiers. One of the functions of uniforms in the 'real world' is to reduce individuality and hence, at least indirectly, to increase deindividuation (Brown, 1985).

Indeed, dispossessing people of their 'civilian' clothes is a major technique of *depersonalising* them in 'total institutions' such as prisons and psychiatric hospitals (Goffman, 1968, 1971). As Brown (1985) observes, the victims of aggression are often dehumanised by having their heads shaved and being dressed in ill-fitting clothes, making them appear less human. This, in turn, makes it easier for people to humiliate and abuse them.

The deindividuation produced by wearing military or police uniform increases the likelihood of the wearer's brutality. By the same token, the anonymity of massed ranks of police or soldiers may make them appear less human, making them a more obvious target for a rioting crowd's violence.



Riot police using tear-gas and batons in the protests against the World Trade Organisation in Seattle, Washington, 1999

The positive side of deindividuation

Brown (1988) refers to the US urban riots of the 1960s, where looting and violence weren't completely random but showed signs of selectivity. Similarly, the St Paul's riots in Bristol in 1984 were violent, but also relatively

controlled. Violence was aimed at specific targets (avoiding local shops and houses), and was geographically confined to a small area in the heart of the community. Far from losing their identities, the rioters seemed quite unanimous in a new sense of pride in their community produced by their activities (Brown, 1988).

Deindividuation doesn't necessarily produce antisocial behaviour. In Gergen *et al.*'s (1973) 'black room experiment', participants spent an hour together, either in a completely dark room or in a normally lit room. In the dark room, they chatted and explored the physical space to begin with, and then began to discuss serious matters. Conversation then faded and was replaced by physical contact; 90 per cent of participants deliberately touched each other. Almost 50 per cent hugged, and 80 per cent admitted to being sexually aroused. By comparison, controls talked politely in the light, for the whole hour.

It seems that we can become uninhibited in the dark, where the usual norms of intimacy no longer prevail. We feel less accountable for our behaviour in such situations, but this state of deindividuation can be to the mutual benefit of all participants (Gergen & Gergen, 1981).

The social constructionist approach

Mummendey (1996) has proposed that whether or not a behaviour is considered aggressive depends on a judgement made by either an observer or the performer. In Mummendey's view, the appraisal of a behaviour as aggressive involves going beyond a description to an *evaluation* of it. For Mummendey:

> When asking about the causes of aggression, more is of interest than simply the conditions for the occurrence of that behaviour. Of even greater importance are the conditions for judging the individual behaviour as 'aggressive'.

The case of soccer hooliganism

ASK YOURSELF...

- How might the theories of aggression discussed above explain soccer hooliganism?
- How easily can they account for the fact that most people at soccer matches *don't* behave in this way?

Marsh *et al.* (1978) used an *ethogenic* and *phenomenological* approach in their study of football hooliganism (*'The Rules of Disorder'*). This involved mainly participant observation and interviews (both formal and informal) to gather self-reports of behaviour, in an attempt to uncover the rules to which football hooligans attribute their behaviour.

Marsh *et al.* were less concerned with aggression or violence as such, and more concerned with trying to interpret the social lives of particular segments of contemporary young people. They argued that all human beings need to achieve personal dignity, a sense of self-worth and personal identity. Certain sections of young people in contemporary British society are deprived of the means of achieving these within the conventional worlds of school and work. So, they're forced to turn to the worlds of their own sub-cultures, which provide 'a sense of belonging and prestige'.

For urban *young men* in particular, it's the football terraces that allow for the emergence of sub-cultural rituals. The ritual 'warfare' between rival groups of supporters allows the construction of alternative social hierarchies, within which those who are destined to fail in conventional terms (school, work etc.) may succeed. Confrontation between rival supporters is usually *symbolic,* and consequently non-violent, as in the parading of gear (scarves, boots, denim jackets), the yelling of chants, and the chorusing of football songs. Rival fans who follow their group's rules quite carefully can avoid real physical harm to themselves or others. For example, chasing the opposition after a match ('seeing the others off') doesn't inevitably end in violence, since part of the agreed code is not actually to catch anyone.



The highly ritualised and synchronised behaviour of football supporters

Although people do get injured (and occasionally killed), all such confrontation is governed by rules. Far from being lawless, random behaviour indicating a mob's loss of control, rules exist to ensure that aggression is kept within certain bounds. Soccer hooliganism is a kind of staged production. Much of what appears to be aggression is simply part of an identity-enhancing symbolic display, a *cultural drama*. While aggression may be a taken-for-granted human predisposition, what society defines as antisocial behaviour may well be a set of functional activities dressed up as a cultural drama. According to Stainton-Rogers *et al.* (1995):

> If we look for the explanation of aggression within the individual actor, rather than addressing the complexity of the cultural

drama, we fail to recognise the social, political and economic factors which are involved in such social activity.

Marsh *et al.*'s research demonstrates one of the ways in which aggression is *socially constructed:* there are no objective 'facts' about aggression (or anything else), only accounts, interpretations, ways of talking about it, and attempts to represent it.

CONCLUSIONS

Taking the example of soccer hooliganism, violence and aggression need to be explained at several different *levels.* Most of the theories we've discussed are *individualistic.* Stemming from Le Bon's original study of rioting crowds, even deindividuation theory stresses how crowds release the primitive, uncivilised/unsocialised tendencies within the psyche of every *individual.*

What's needed is an analysis which integrates many levels of explanation. While the largely symbolic and ritualistic nature of much football supporter behaviour can be explained in terms of the 'rules' identified by Marsh *et al.*:

> ... individual or group frustrations coupled with the highly emotional atmosphere of a match may occasionally tip the balance towards real aggression. In the mix, there may also be individuals who are simply aggressive, and who find the ferment of a match an ideal context in which to indulge in overt aggression ... (Hogg & Abrams, 2000)

CHAPTER SUMMARY

- Lorenz argues that aggression between members of non-human species is characterised by **ritualisation** and **appeasement rituals/gestures**, which prevent conflict resulting in serious injury or death. In humans, these have been overridden by **destructive technology**.
- Lorenz's account seriously underestimated the extent to which members of other species kill each other, together with the role of **cultural evolution**.
- According to Freud, our self-destructive **death instinct** is 'diverted' into outwardly directed aggression. Both Freud and Lorenz believed that aggression builds up spontaneously and needs regular release. Some support for this view comes from studies of **overcontrolled violent criminals**.
- Dollard *et al.*'s **frustration–aggression hypothesis** (FAH) represented an attempt to integrate some of Freud's ideas with those of learning theory. Several modifications were made to the original theory, concerning the conditions under which frustration is likely to produce aggression.
- According to Berkowitz's **aggressive-cue theory** (ACT), environmental stimuli which have an aggressive meaning are necessary for anger to be converted into aggressive behaviour. One demonstration of this is the **weapons effect**.
- Zillman's **excitation-transfer theory** (ETT) sees the arousal–aggression relationship as a **sequence**. However, the existence of 'neutral' arousal has been questioned. The cognitive approach sees anger and aggression as **parallel** processes.
- Bandura's Bobo doll experiments were carried out in the context of his **social learning theory** (SLT), which gives central place to **observational** learning/modelling. They represent the first phase of scientific research into the effects of media violence.
- Perception of the level of **TV violence** is subjective and may not correspond with objective counts of violent incidents. Real-life incidents in news and documentaries are generally rated as more violent than those in fictional settings or cartoons.
- Several different methodologies have been used to study the effects of media violence. These include **correlational studies**, **laboratory**, **field** and **natural experiments** and **longitudinal panel studies**.
- The four specific effects of TV that have been investigated are **arousal**, **disinhibition**, **imitation**, and **desensitisation**. These have all been shown to **increase** following exposure to media violence.
- **Deindividuation** explains aggression in terms of the reduction of inhibition against antisocial behaviour when individuals are part of a group. In this setting, there's a loss of **individuality** and an increase in **anonymity**.
- Anonymity has been operationalised by wearing hoods and masks, which make it more likely that individuals will give more punitive electric shocks to an innocent person.
- However, group/crowd behaviour isn't always random, antisocial, and uncontrolled. Anonymity can reduce inhibitions to produce positive effects.
- **Social constructionists** see behaviour as being aggressive or non-aggressive if that's how it's **evaluated**. **Soccer hooliganism** may only **appear** to be violent if judged externally, and without understanding the 'rules' and rituals governing it.

Links with other topics/chapters

- The case of terrorism in general, and the *suicide bomber* in particular, illustrate the controlled, premeditated nature of hostile aggression. This is one aspect of *criminological psychology* (Chapter 46).
- Storr (1968) identifies four forms of *psychopathology* attributable to the inadequate resolution of the aggressive drive, namely *depression, schizoid behaviour, paranoia* (Chapter 44) and *psychopathy* (Chapter 46).
- Frustration can produce a variety of responses (of which aggression is one), including *regression* (Chapter 42), *depression* and *lethargy* (Seligman, 1975: Chapter 44).

- Apologising or confessing can have a similar effect to the presence of mitigating circumstances in changing the attributions made about a frustrater (Weiner, 1992), and represent important aspects of *impression management* (Chapter 22).
- Excitation transfer is a way of explaining the *misattribution of emotional arousal,* which is consistent with Schachter's *cognitive labelling theory* (Chapter 10).
- Berkowitz's rejection of ETT's claim that arousal can be 'unspecific' or 'neutral' mirrors the debate between James–Lange and Cannon–Bard in their theories of emotion (Chapter 10).
- Desensitisation in response to TV violence is the equivalent of developing *tolerance to drugs* with repeated use (Chapter 8).
- Putting the debate regarding the link between watching violence and violent behaviour into a wider social and political context, Taylor *et al.* (1994) argue that TV and movies contribute only a small incentive effect to *crime* and violence over and above the contribution of social factors such as *racial prejudice* (Chapter 25), unemployment, and the widespread availability of drugs and guns (Chapter 46).
- Bushman & Anderson (2001b) believe that support for the link between violent media and violent behaviour is stronger than that between exposure to lead and reduced IQ (*intelligence quotient*) (Chapter 41).
- The depersonalisation of the victims of violence and abuse is demonstrated in Zimbardo *et al.*'s *prison simulation experiment* (Chapter 27).

Defining prosocial behaviour

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Empathy–altruism

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30

ALTRUISM AND PROSOCIAL BEHAVIOUR



INTRODUCTION AND OVERVIEW

What do human kidney donors and rabbits that drum their feet on the ground have in common? At first sight, very little. But on closer inspection, they both seem to be doing things that benefit others (another person or other rabbits, respectively). In the case of the kidney donor, this is self-evident. In the case of the rabbit, drumming its feet serves as a warning to other rabbits of some threat or danger.

These are both examples of *helping behaviour*, a major form of *prosocial behaviour*. They're also often cited as cases of *altruism*, that is, help performed for the benefit of others with no expectation of personal gain. But are people – let alone rabbits – capable of acting in a purely unselfish way? Is our helping always motivated by the prospect of some benefit for ourselves – however subtle? According to Batson (2000):

> We want to know whether anyone ever, in any degree, transcends the bounds of self-interest and helps out of genuine concern for the welfare of another. We want to know whether altruism – motivation with the ultimate goal of increasing another's welfare – exists.

According to the theory of *universal egoism*, people are fundamentally selfish and altruism is an impossibility (Dovidio, 1995). This has been, and still is, the dominant ethos in social science, including psychology. Similarly, sociobiologists consider acts of *apparent* altruism to be acts of selfishness in disguise (see Gross *et al.*, 2000).

Philosophers have debated for centuries whether people are by nature selfless or selfish. McDougall (1908) proposed that 'sympathetic instincts' are responsible for altruistic acts (see Chapter 10). Only about 20 psychological studies of helping were published before 1962, but the murder of Kitty Genovese in 1964 (see below) opened up the floodgates of research into bystander intervention and altruism (Schroeder *et al.*, 1995). Latané and Darley were the pioneers of this research.

DEFINING PROSOCIAL BEHAVIOUR

According to Schroeder *et al.* (1995), *prosocial behaviour* includes behaviour intended to benefit others, such as helping, comforting, sharing, cooperating, reassuring, defending, donating to charity and showing concern. It follows that acts that *unintentionally* help others *don't* count, while those that are intended to help but actually *fail* to help *do* count.

Fiske (2004) observes that what actually *benefits* another person is socially defined, changing with time and place. Depending on the context, prosocial acts might include circumcision, foot-binding, piercing, scarring, tooth-pulling and ruthless criticism.

Although prosocial behaviours are intended to benefit others, the underlying motivation might or might not be other-oriented. The *altruism* concept underlies the subset of prosocial behaviours that are motivated mainly out of a consideration of another's needs rather than one's own (Piliavin & Charng, 1990). As a motive, altruism involves self-sacrificial costs and the absence of any 'obvious' external rewards (Batson, 1998).

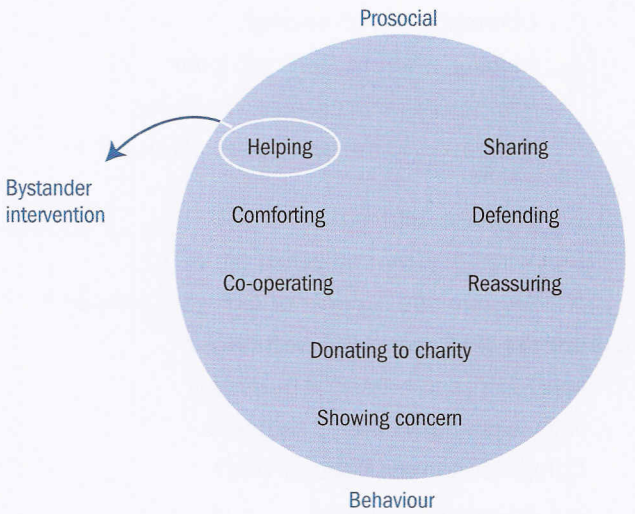
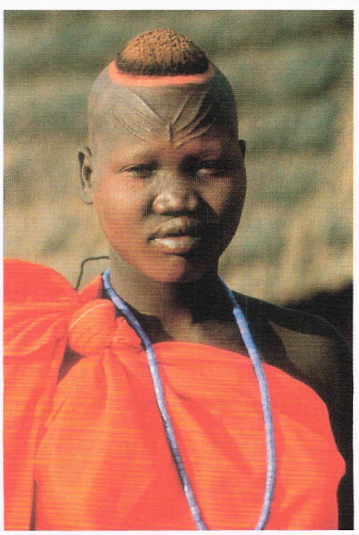


Figure 30.1 The varieties of prosocial behaviour, including helping and bystander intervention



What's prosocial is defined by time and place

HELPING AND BYSTANDER INTERVENTION

CASE STUDY 30.1: Kitty Genovese (adapted from the *New York Times*, March 1964)

37 Who Saw Murder Didn't Call the Police

Apathy at Stabbing of Queens Woman Shocks Inspector

By Martin Gansberg

For more than half an hour 38 respectable, law-abiding citizens in Queens watched a killer stalk and stab a woman in three separate attacks ...

Twice the sound of their voices and the sudden glow of their bedroom lights interrupted him and frightened him off. Each time he returned, sought her out and stabbed her again. Not one person telephoned the police during the assault; one witness called after the woman was dead.

'He Stabbed Me!'

She got as far as a street light in front of a bookstore before the man grabbed her. She screamed. Lights went on in the ten-storey apartment house ... which faces the bookstore.

Windows slid open and voices punctured the early morning stillness.

Miss Genovese screamed: 'Oh, my God, he stabbed me! Please help me! Please help me!'

From one of the upper windows in the apartment house, a man called down: 'Let that girl alone!'

The assailant looked up at him, shrugged and walked ... toward a white sedan parked a short distance away. Miss Genovese struggled to her feet.

Lights went out. The killer returned to Miss Genovese, now trying to make her way around the side of the building ... to her apartment. The assailant grabbed her again.

'I'm dying!' she shrieked.

'I'm dying!'

A City Bus Passed

Windows were opened again, and lights went on in many apartments. The assailant got into his car and drove away. Miss Genovese staggered to her feet. It was 3.35 a.m.

The assailant returned. By then, Miss Genovese had crawled to the back of the building ... he saw her slumped on the floor at the foot of the stairs. He stabbed her a third time – fatally.

It was 3.50 by the time the police received their first call, from a man who was a neighbour of Miss Genovese ...The man explained that he had called the police after much deliberation. He had phoned a friend ... for advice and then he had crossed the roof of the elderly woman to get her to make the call.

'I didn't want to get involved,' he sheepishly told the police.

Suspect is Arrested

Today witnesses from the neighbourhood ... find it difficult to explain why they didn't call the police.

The police said most persons had told them they had been afraid to call, but had given meaningless answers when asked what they had feared.

'We can understand the reticence of people to become involved in an area of violence,' Lieutenant Jacobs said, 'but where they are in their homes, near phones, why should they be afraid to call the police?'

... A housewife ... said, 'We thought it was a lovers' quarrel.' A husband and wife both said, 'Frankly, we were afraid.' They seemed aware of the fact that events might have been different. A distraught woman ... said, 'I didn't want my husband to get involved.'

One couple, now willing to talk about that night, said they heard the first screams ... 'We went to the window to see what was happening,' he said, 'but the light from our bedroom made it difficult to see the street.' The wife, still apprehensive, added: 'I put out the light and we were able to see better.'

Asked why they hadn't called the police, she shrugged and replied, 'I don't know.'

ASK YOURSELF...

- What do you think you'd have done if you'd been one of Kitty's neighbours?

The Kitty Genovese murder, together with findings from their laboratory studies, led Latané and Darley to introduce the concept of the *unresponsive bystander* (or *bystander apathy*) to denote people's typically uncaring attitude towards others in need of their help.

While the American media thought it remarkable that out of 38 witnesses not a single one did anything to help, Latané and Darley believed that it was precisely *because* there were so many that Kitty Genovese wasn't helped. So, how does the presence of others determine whether any particular individual will intervene in an emergency, and what other influences are involved?

The decision model of bystander intervention

According to Latané & Darley's (1970) *decision model,* before someone helps another, that person must:

- notice that something is wrong
- define it as a situation requiring help
- decide whether to take personal responsibility
- decide what kind of help to give
- implement the decision to intervene.

This represents a logical sequence of steps: a negative response at any one step means that the bystander won't intervene, and the victim won't receive help (at least not from that bystander: see Figure 30.2, page 516).

Noticing that something is wrong

Studies conducted in several different countries (including the USA, UK, Saudi Arabia and Sudan) have found that people living in urban areas tend to be less helpful than those in rural settings (Hegde & Yousif, 1992; Yousif & Korte, 1995).

ASK YOURSELF...

- Why do you think there should be this urban/rural divide?
- Does it surprise you?

Milgram (1970) believes it may represent a way in which urban dwellers cope with *stimulus overload:* they restrict their attention mainly to personally relevant events. Strangers and their situations of need may, therefore, go unnoticed.

Regardless of location, people are also more likely to be attentive to others when they're in a good mood (which, in turn, makes them more likely to help) (Dovidio & Penner, 2004).

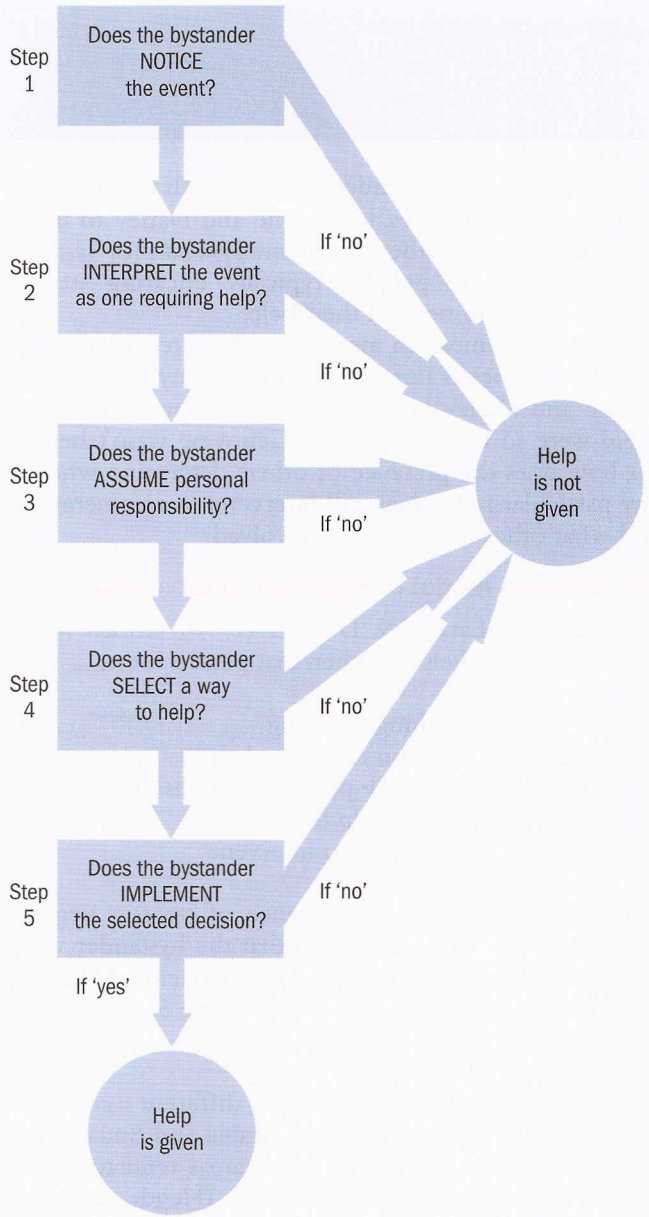


Figure 30.2 Latané and Darley's five-step decision model of bystander intervention and non-intervention (based on Schroeder *et al.*, 1995)

Defining the situation as an emergency

In one of the first bystander experiments (Latané & Darley, 1968), participants were shown into a room in order to complete some questionnaires. In one condition they were alone, while in another there were two others present. After a time, steam (resembling smoke) began to pour through a vent in the wall. 75 per cent of those working alone reported the smoke, half of them within two minutes, while 62 per cent of those in the three-person groups carried on working for the full six minutes (by which time it was difficult to see the questionnaires and the experiment was terminated).

Latané & Rodin (1969) obtained similar results when participants heard the female experimenter in an adjoining room fall, cry out, and moan. They were much faster to react when alone than when others were present. In a variation of Latané and Rodin's experiment, 70 per cent of participants on their own responded within 65 seconds, and two friends together responded within a similar time. Two strangers together were less likely to react at all (but more slowly if they did), and if someone was paired with a stooge who'd been instructed not to intervene at all, that person showed the least and slowest reaction of all.

Pluralistic ignorance

In post-experimental interviews, each participant reported feeling very hesitant about showing anxiety, so they looked to others for signs of anxiety. But since everyone was trying to appear calm, these signs weren't found and each person defined the situation as 'safe'. This is called *pluralistic ignorance.*

ASK YOURSELF...

- Can pluralistic ignorance account for the inaction of the witnesses to Kitty Genovese's murder?

There seems little doubt that the witnesses realised at the time what was going on. Although one woman claimed she thought it was a 'lovers' quarrel', most claimed they were afraid to intervene (they didn't deny that help was needed), and Kitty's second lot of screams (if not the first) must have made the nature of the situation quite unambiguous.

Genuine ambiguity may sometimes account for lack of intervention, as in situations of domestic violence. According to Shotland & Straw (1976), we'd be much more likely to help a victim if we believed s/he didn't know the attacker than if we believed a relationship existed between the two. Male participants were shown a staged fight between a man and a woman. In one condition the woman screamed 'I don't even know you', while in another, she screamed 'I don't even know why I married you!' Three times as many men intervened in the first condition as in the second condition.

Accepting personal responsibility or diffusing responsibility

KEY STUDY 30.1 The stresses of urban living (Darley & Latané, 1968)

- College students were recruited to discuss the problems of living in a high-pressure urban environment.
- Instead of face-to-face discussion, they communicated via an intercom system ('so as to avoid any embarrassment'). Each participant would talk for two minutes, then each would comment on what the others had said. The other 'participants' were, in fact, tape recordings.
- Early in the discussion, the victim (a stooge) casually mentioned that he had epilepsy and that the anxiety and

stress of urban living made him prone to seizures. Later, he became increasingly loud and incoherent, choking, gasping, and crying out before lapsing into silence.

- Darley and Latané were interested in the percentage of participants who responded within five minutes (by coming out of the small room to look for the victim).
- Of those who believed they were the *only other* participant, 85 per cent intervened. Of those who believed there were *two others* (three altogether), 62 per cent intervened, and of those who believed there were *five others* (six altogether), only 31 per cent intervened. The most responsive group was also the fastest to respond. These findings were confirmed by Latané *et al.* (1981).

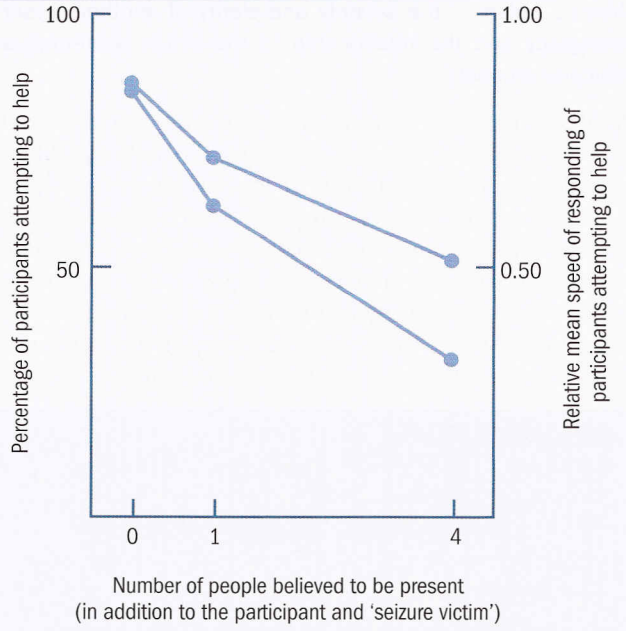


Figure 30.3 Percentage of participants attempting to help (by leaving their room to look for the 'victim' within five minutes) as a function of the number of others believed to be present, and the relative mean speed of responding of participants attempting to help (adapted from Darley & Latané, 1968)

ASK YOURSELF...

- Try to account for Darley and Latané's findings.
- Can pluralistic ignorance explain them?

While pluralistic ignorance may make it less likely that we'll define a situation as an emergency in the first place, this cannot apply in Darley and Latané's study. The best explanation is *diffusion of responsibility,* that is, the denial of personal responsibility and the belief that someone else will probably do what's necessary. The more bystanders that are present (or believed to be present), the lower the probability that any one of them will accept responsibility. This is more likely to happen when the victim is remote (can only be 'heard' from some other room in the building).

Kitty Genovese could be both heard and seen (by those who made the effort to look out of their windows), and the second lot of screams must have made it obvious that no one had gone for help!

Piliavin *et al.* (1981) use the term *dissolution* of responsibility to describe what happens when the behaviour of other witnesses cannot be observed and the participant 'rationalises' that someone else must have already intervened (as in the 'seizure' experiment). Diffusion occurs when *all* the witnesses accept responsibility. Regardless of which term is used, it's consistently found that the presence of others inhibits an individual from intervening (Pilivian *et al.*, 1981).

However, there are limits to diffusion of responsibility. Piliavin *et al.* (1969) found that help was offered on crowded subways in New York as frequently as on relatively empty ones (see Key Study 30.3). As Brown (1985) suggests, perhaps it's more difficult not to help in a face-to-face situation and in an enclosed space.

Choosing a way to help: the role of competence

Related to diffusion of responsibility, and something which may interact with it, is a bystander's competence to intervene and offer appropriate help. In the presence of others, one or more of whom you believe is better equipped to offer help, diffusion of responsibility will be increased. However, if you believe you're best equipped to help, the presence of others will have relatively little effect on your behaviour. For example, if a swimmer is in trouble, we'll usually let the lifeguard go to the rescue, and even if we were the only other person at the pool,



We're happy to diffuse responsibility when more competent bystanders are present

we'd be extremely unlikely to dive in if we couldn't swim ourselves! But if we are an excellent swimmer and are trained in life-saving skills, we'd be much more likely to help even if others were present (Baron & Byrne, 1991).

According to Schroeder *et al.* (1995), we shouldn't take the inhibiting effects of other people as necessarily indicating bystander apathy, as Latané and Darley did. People may be truly concerned about the victim's welfare, but sincerely believe that someone else is more likely – or better qualified in some way – to help. For example, Bickman (1971) replicated the 'seizure' experiment, but manipulated the participants' belief about proximity to the victim. Those who believed the other person was as close to the victim as they were (in the same building) and equally capable of helping, were less likely to help than those who believed they were alone (diffusion of responsibility). But when they believed the other person was in another building and so unable to help, they helped as much as those who believed they were alone.

Evaluation of the decision model

- Latané and Darley's model provides a valuable broad framework for understanding bystander intervention (Dovidio & Penner, 2004; Schroeder *et al.*, 1995).
- Although originally designed to explain helping in emergency situations, aspects of the model have been successfully applied to many other situations, ranging from preventing someone from drinking and driving, to deciding to donate a kidney to a relative.
- However, it doesn't provide a complete picture. For example, it doesn't tell us very much about why 'no' decisions are taken at any of the five steps, particularly after the situation has been defined as an emergency and personal responsibility has been accepted: a great deal takes place between steps 3 and 5. Also, as Dovidio (1995) points out, the model focuses on why people *don't* help others – we also need to ask why they *do*.

The arousal–cost–reward (ACR) model

The *arousal–cost–reward* (ACR) *model* (Piliavin *et al.*, 1969, 1981; Dovidio *et al.*, 1991) is a major alternative to the decision model, and represents a kind of 'fine-tuning' of some of the processes outlined in the decision model. It identifies a number of critical situational and bystander variables, which can help predict how likely it is that intervention will take place under any particular set of circumstances.

The ACR model was first introduced by Piliavin *et al.* (1969) as a 'heuristic device' in attempting to account for the results of the New York subway experiment (see Key Study 30.3). It was subsequently revised and expanded to cover both emergency and non-emergency helping (Piliavin *et al.*, 1981).

The model identifies two conceptually distinct but functionally interdependent influences on helping:

1. *arousal* in response to the need or distress of others is an emotional response. This is the basic *motivational construct*. When arousal is attributed to the distress of the victim, it's experienced as unpleasant, and the bystander is motivated to reduce it
2. the *cost–reward* component involves cognitive processes by which bystanders assess and weigh up the anticipated costs and rewards associated with both helping and not helping.

According to Dovidio *et al.* (1991):

> People are aroused by the distress of others and exhibit emotionally empathic reactions to the problems and crises of others ... also ... the severity and clarity of another person's emergency and the relationship to the victim systematically influence arousal ...

While arousal and helping are often only correlated, the ACR model sees arousal as *causing* the helping. There's considerable empirical support for this claim (Dovidio *et al.*, 1991). The model proposes that bystanders will choose the response that most rapidly and completely reduces the arousal, incurring as few costs as possible. So, the emotional component provides the motivation to do something, while the cognitive component determines what the *most efficient or effective response* will be.

> ***ASK YOURSELF...***
> - Try to remember a situation in which you helped someone who was clearly upset or distressed.
> - How did you reach the decision to help?
> - What were your motives for helping – at the time and in retrospect?

The cost–reward analysis

Research has concentrated on this part of the ACR model and, specifically, on the relative costs of helping and not helping. (But see the section on arousal below.)

- The *costs of helping* include lost time, effort, possible physical danger, embarrassment, disruption of ongoing activities, and psychological aversion (as in the case of a victim who's bleeding or drunk).
- The rewards of helping include fame, gratitude from the victim and relatives, the intrinsic pleasure and self-satisfaction derived from the act of helping, the avoidance of guilt (for not helping), and even money.
- The costs of not helping include guilt, blame from others, and cognitive and/or emotional discomfort associated with knowing that another person is suffering.

What's high cost for one person may be low cost for another (and vice versa). Cost may also differ for the same person from one situation to another, and even from one occasion to another (depending on mood, for example).



Former nursery nurse Lisa Potts shows off her George Medal for bravery, after protecting primary school children from a man wielding a machete

Table 30.1 is based largely on the ACR model as it had been proposed prior to 1981. Piliavin *et al.* (1981) and Dovidio *et al.* (1991) elaborated the model by considering the influence of a new range of variables, such as bystander personality and mood, the clarity of the emergency, victim characteristics, the relationship between the victim and potential helpers, and attributions made by potential helpers of the victim's deservingness. Many of these variables interact and contribute to (a) how aroused the bystander is, and (b) the perceived costs and rewards for direct intervention.

Different kinds of costs

Two kinds of costs associated with not helping are *personal costs* (e.g. self-blame, public disapproval) and *empathy costs* (e.g. knowing that the victim continues to suffer). According to Dovidio *et al.* (1991):

> In general ... costs for not helping affect intervention primarily when the costs for helping are low.

Although *indirect helping* becomes more likely as the costs for helping increase (as in serious emergencies), it's relatively infrequent. This may be because it's difficult for bystanders to pull themselves away from such involving situations in order to seek other people to assist (Schroeder *et al.*, 1995). The most common (and positively effective) way of resolving the *high-cost-for-helping/high-cost-for-not-helping dilemma* (see section 2 of Table 30.1) is *cognitive reinterpretation*. This can take one of three forms:

1. redefining the situation as one not requiring help
2. diffusing responsibility
3. denigrating (blaming) the victim.

Each of these has the effect of reducing the perceived costs of not helping. Schroeder *et al.* (1995) stress that cognitive reinterpretation doesn't mean that bystanders are uncaring (or 'apathetic'). On the contrary, it's the fact that they care that creates the dilemma in the first place.

The cost of time

The importance of loss of time as a motive for not helping was shown in a content analysis of answers given in response to five written traffic accident scenarios (Bierhoff *et al.*, 1987, in Bierhoff & Klein, 1988). We're

Table 30.1 Costs of helping/not helping in emergencies/non-emergencies, and the likelihood/type of intervention, as predicted by the arousal–cost–reward model (based on Piliavin *et al.*, 1969)

Costs of helping/not helping and likely outcome	**Examples**
◎ Costs of helping are low	You're unlikely to be injured yourself; the victim is only shocked.
◎ Costs of not helping are high	You'd feel guilty; other people would blame you.
Likelihood of intervention **very high – and direct**	
◎ Costs of helping are high	You don't like the sight of blood; you're unsure what to do.
◎ Costs of not helping are high	It's an emergency – the victim could die.
Likelihood of intervention **fairly high – but indirect**	Call for ambulance/police, or ask another bystander to assist.
Or **redefine the situation** (see text)	Ignore the victim and/or leave the scene.
◎ Costs of helping are high	'This drunk could turn violent or throw up over me'
◎ Costs of not helping are low	'Who'd blame me for not helping?'
Likelihood of intervention **very low**	Bystander may well turn away, change seats, walk away etc.
◎ Costs of helping are low	'It wouldn't hurt to help this blind man across the road'
◎ Costs of not helping are low	'He seems capable of looking after himself; there's very little traffic on the road'
Likelihood of intervention **fairly high**	Bystanders will vary, according to individual differences and how they perceive the norms operating in the particular situation

often in a hurry in many real-life situations, and waiting can be very frustrating. This is why the willingness to sacrifice time for a person in need can be seen as generous (time is money: Bierhoff & Klein, 1988). The most frequently mentioned motives for helping were enhancement of self-esteem and moral obligation.

KEY STUDY 30.2 If you need help, avoid a late Samaritan (Darley & Batson, 1973)

- Darley and Batson's participants were students at a theological seminary, who were instructed to present a talk in a nearby building.
- Half the students were to give a talk on the Good Samaritan, while for the other half it was about jobs most enjoyed by seminary students. Each student was then told:
  - (a) he was ahead of schedule and had plenty of time (to get to the other building), or
  - (b) he was right on schedule, or
  - (c) he was late.
- On the way to give their talk, all the students passed a man (a stooge) slumped in a doorway, coughing and groaning.
- Although the topic given for the talk had little effect on helping, time pressures did: the percentages offering help were 63, 45 and ten for conditions a, b and c, respectively.
- Ironically, on several occasions the 'late' students who were on their way to talk about the Good Samaritan literally stepped over the victim!

This experiment shows that seemingly trivial variables can exert a profound effect on altruistic responses (Bierhoff & Klein, 1988). By contrast, Bierhoff (1983) asked students to volunteer for a psychology experiment. If they participated without payment, the money would be sent to children in need. They could choose up to 12 half-hour sessions and, on average, students volunteered for 3.71 sessions. These findings indicate that the general level of helpfulness is higher than some pessimists might have assumed.

Different types of helping

Certain kinds of *casual helping* (McGuire, 1994) or *low-cost altruism* (Brown, 1986) seem to be fairly common, such as giving a stranger directions or telling them the time. Latané & Darley (1970) had psychology students approach a total of 1500 passers-by in New York to ask them such routine, low-cost favours. Depending on the nature of the favour, between 34 and 85 per cent of New Yorkers proved to be 'low-cost altruists'. However, most people refused to tell the student their names.

Generally, as the type of intervention that's required changes from casual helping through 'substantial personal helping' (such as helping someone move house) and 'emotional helping' (such as listening to a friend's personal problems) to 'emergency helping' (which is what's involved in most of the studies discussed so far), the costs of intervention increase. But so do the costs of *not* helping.

ASK YOURSELF...

- Would you be more likely to go to the aid of a stranger who collapses apparently due to the effects of alcohol or for some other (medical) reason?
- If the victim were bleeding, would you be less likely to offer help?

KEY STUDY 30.3 Good Samaritanism – an underground phenomenon? (Piliavin *et al.*, 1969)

- Student experimenters pretended to collapse in subway train compartments – they fell to the floor and waited to see if they'd be helped.
- Sometimes they were carrying a cane (the *lame condition*); sometimes they were wearing a jacket which smelled very strongly of alcohol and carried a bottle in a brown paper bag (the *drunk condition*).
- As predicted, help was offered much less often in the 'drunk' than in the 'lame' condition (20 per cent compared with 90 per cent, within 70 seconds).

Helping different kinds of victim

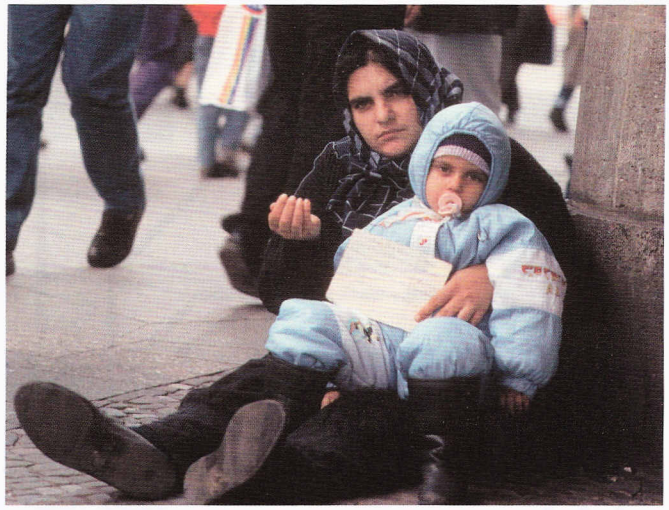
In a second study, the person who 'collapsed' bit off a capsule of bloodlike dye, which trickled down his chin. The helping rate dropped from 90 to 60 per cent. People were much more likely to get someone else to help, especially someone they thought would be more competent in an emergency (Piliavin & Piliavin, 1972).

Similarly, Piliavin *et al.* (1975) found that when the victim had an ugly facial birthmark, the rate of helping dropped to 61 per cent. Other studies have reported that a smartly dressed and well-groomed stranded motorist is far more likely to receive help from passing motorists than one who's casually dressed or looks untidy.

The importance of difference

The greater the victim's distress, injury or disfigurement, or the more we disapprove of them or blame their plight on their undesirable behaviour, the more likely we are to perceive them as being different from ourselves. This, in turn, makes it less likely that we'll offer them help. The psychological costs of helping someone perceived as being different from ourselves seem to be greater than the same help offered to someone perceived as being similar.

On this basis, we'd expect help to be offered less often to someone of a different racial group from the bystander. But the evidence isn't so clearcut. For example, in the New York subway experiment, there was no evidence of greater same-race helping when the victim was apparently ill. However, when he appeared drunk, blacks were



Foreign beggars on the streets of London. Are they less likely to be given money because they are foreigners – or more likely because they have children?

much more likely to help a black drunk and whites a white drunk.

ASK YOURSELF...

- How might you account for this finding in terms of different types of racism? (See Chapter 25.)

Many whites who may truly believe they're not prejudiced still harbour unconscious negative feelings. As a result of possessing both conscious, non-prejudiced convictions and unconscious, prejudiced feelings, *symbolic* (or *aversive*) racists discriminate in certain situations but not others. Where the social norms for appropriate behaviour are clear and unambiguous (for example, people who are ill should be helped), aversive racists won't discriminate. If they did behave in a discriminatory way, their self-concept (as non-racists) would be threatened, and this would mean that significant costs were incurred by not helping a victim on the grounds of race/ethnic group. However, when social norms are weak or ambiguous, or where aversive racists can justify a negative response based on some factor other than race/ethnic group ('drunks can turn nasty, so leave them alone'), then discrimination will occur.

KEY STUDY 30.4 Diffusion of responsibility as a 'cover' for racism (Gaertner & Dovidio, 1977)

- Gaertner and Dovidio used the cubicle and intercom procedure, as in the Darley & Latané (1968) 'seizure' experiment (see Key Study 30.1).
- White bystanders, who believed they were the only witness to an emergency and when appropriate behaviour was clearly defined, didn't discriminate against a black victim. In fact, they were slightly more likely to help a black than a white victim (94 per cent compared with 81 per cent).
- But when they believed there were other bystanders, they helped a black victim about half as often as a white victim (38 and 75 per cent respectively).
- The opportunity to diffuse responsibility offered a non-race-related excuse to treat blacks differently, thereby allowing them to avoid recognising racial bias as a factor (Schroeder *et al.*, 1995).

Personality differences and helping

People who are characteristically more sensitive to the needs of others might experience greater arousal in response to another's plight, or experience this arousal more negatively, or perceive greater costs for not helping. Helpers are generally more 'other-oriented' than non-helpers. Oliner & Oliner (1988) compared 231 non-Jews who helped save Jews in Nazi Europe with 126 non-savers (of similar age and nationality); the former had stronger beliefs in equality and showed greater empathy. Forty years after the Second World War ended, those who'd risked their lives were still more helpful than those who hadn't. The savers displayed both *affective empathy* (the tendency to experience emotion in response to others' emotional experience) and *cognitive empathy* (the ability to see things from another's perspective).

Oliner and Oliner also found that the savers were more likely to accept responsibility for helping. This is associated with the cognitive processes involved in weighing the various costs and rewards for helping, and the steps involved in making the decision to help (Graziano & Eisenberg, 1997). The Oliners also found that a sense of *self-efficacy* (Bandura, 1977a) and feelings of self-confidence distinguished the savers from the non-savers. These differences are related to the subjective assessment of costs and rewards, and perceptions of the ability to help successfully (Dovidio & Penner, 2004).

As Table 30.1 shows, individual differences will have their main impact when the costs for helping and not helping are both low, and when the situation is ambiguous and 'psychologically weak' or less 'evocative'. But the more emergency-like the situation (and, hence, the more compelling and evocative it is), the less relevant person variables will be. According to Dovidio & Penner (2004):

> ... although personality is now recognised as an important factor in helping, personality traits typically play a less substantial role in helping than do situational factors ...

Gender differences and helping

Although both men and women experience physiological arousal in response to others' distress, women are more likely to interpret this arousal as a positive *empathic*

response to others' needs (Eisenberg & Lennon, 1983). This would predict greater helping by women. However, Eagly & Crowley (1986) reviewed 172 studies and found that men turn out to be significantly *more* helpful than women. How can we reconcile these two things?

One answer relates traditional gender roles and the kind of helping required in most experimental studies of bystander intervention. According to Eagly (1987), the female gender role involves caring for others, providing friends with personal favours, emotional support, counselling about personal problems, and so on (*communal helping*). By contrast, the male gender role requires heroism and chivalry: men are more likely to help another when there's an audience present to witness the helping act, and/or where there's an element of risk involved in helping (*agentic helping*). Most studies of bystander intervention (at least those involving emergencies) seem to require agentic helping.

Gender roles also affect perception of the costs and rewards associated with various types of helping. For example, Otten *et al.* (1988) found that in response to friends' requests for psychological support, women (compared with men) said they'd feel worse for not visiting the friend (higher cost for not helping) and perceived the visit to be less of an imposition on their time (lower cost for helping). Similarly, men (compared with women) are more likely to see the cost of failing to act *heroically* as greater, and the cost of intervening (such as personal harm) as lower (Eagly & Crawley, 1986).

'We-ness'

According to Piliavin *et al.* (1981), this:

> ... connotes a sense of connectedness or the categorisation of another person as a member of one's own group ...

The closer the relationship to the person in need, the greater the initial arousal and costs for not helping, and the lower the costs for helping.

Evaluation of the arousal–cost–reward model

As noted in the *Introduction and overview* the crucial question as far as altruism is concerned is *why* we help other people.

ASK YOURSELF...

- Is helping ever motivated by a genuine wish to benefit someone else, or are we always motivated by self-interest?

Universal egoism

Underlying the ACR model (like exchange theory on which it's partly based) is an *economic* view of human behaviour: people are motivated to maximise rewards and minimise costs (Dovidio *et al.*, 1991). Faced with a potential helping situation, we weigh the probable costs and rewards of alternative courses of action, then arrive at a decision that produces the best outcome – *for ourselves.* This is one form of *universal egoism:* everything we do, no matter how noble and beneficial to others, is really directed towards the ultimate goal of self-benefit.

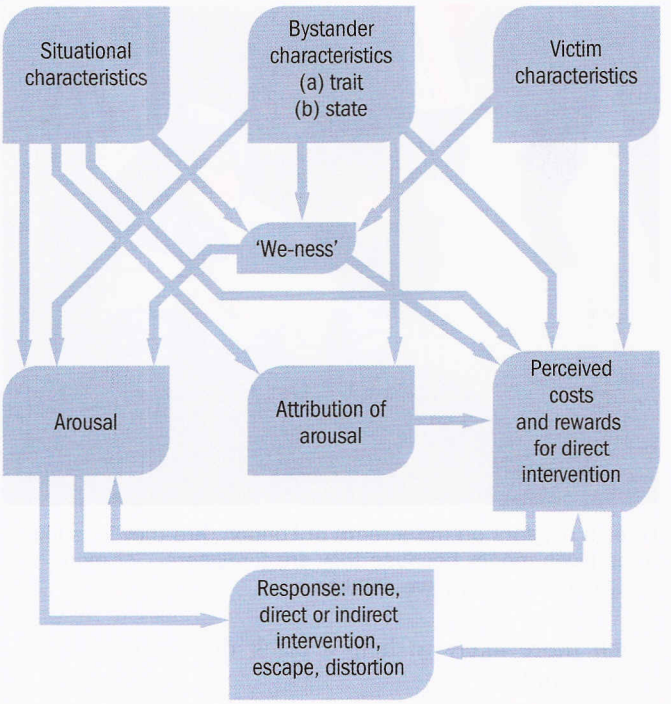


Figure 30.4 Summary diagram of influences on bystander behaviour

Another form of universal egoism relates to the *arousal* component of the ACR model. According to the *negative state relief* (NSR) *model* (Cialdini *et al.*, 1982, 1987), harming another person or witnessing another being harmed can induce negative feelings (such as guilt and sadness). This motivates the harmer/observer to reduce these feelings. Through socialisation and experience, we learn that the good feelings derived from helping can reduce these negative feelings, making us feel better. In other words, according to the NSR model, people are motivated primarily to feel good, and the motivation for helping others is essentially egoistic.

Box 30.1 Comparing the ACR and the NSR model

Although both models see helping as motivated by egoistic concerns:

- according to the ACR model, only arousal attributed to the victim's plight will motivate helping
- the NSR model maintains that *any* negative emotions (especially guilt and sadness) can motivate helping *regardless* of their attributed source
- the ACR model is a tension-reduction model, which assumes that a victim's need induces an arousal state in a potential helper, and the goal of intervention is to alleviate his/her own aversive state by removing the victim's distress

- according to the NSR model, people in negative moods are looking for ways to eliminate or neutralise their negative emotions, so *any* event will do – including those that have nothing to do with benefiting the victim.

(Based on Dovidio & Penner, 2004)

Empathy–altruism

Those who advocate the *empathy–altruism hypothesis* (EAH) (for example, Batson, 1991) don't deny that much of what we do (including what we do for others) is egoistic. But they claim that there's more than just egoism: under certain circumstances, we're capable of a qualitatively different form of motivation, whose ultimate goal is to *benefit others.*

Empathic emotions include sympathy, compassion, tenderness, and so on, and are associated with *empathic concern*. These empathic emotions can and should be distinguished from the more *self-oriented emotions* of discomfort, anxiety and upset, which are associated with *personal distress.* (This corresponds to the distinction between personal and empathic costs for not helping: see above, page 517.) While personal distress produces an egoistic desire to reduce one's own distress, empathic concern produces an altruistic desire to reduce the other's distress. These are qualitatively different responses.

According to Darley (1991):

> In the United States and perhaps in all advanced capitalistic societies, it is generally accepted that the true and basic motive for human action is self-interest. It is the primary motivation, and is the one from which other motives derive. Thus it is the only 'real' motivation, a fact that some celebrate and some bemoan but most accept ... To suggest that human actions could arise for other purposes is to court accusations of naïveté or insufficiently deep or realistic analysis ...

Testing the EAH

If helping benefits the person in need *and* the helper (as it often does), how are we to know the ultimate goal? If ultimate goals are reached by the *same* behaviour, how are we ever to know which goal or goals are ultimate? According to Batson (2000), this puzzle has led many scientists to give up on the question of the existence of altruism – it cannot be answered empirically. But Batson disagrees.

Over the past 20 years, Batson and others have conducted a series of laboratory experiments in which people are given an unexpected opportunity to help someone in need. Some are induced to feel empathy, others not. In addition, circumstances have been systematically varied in order to disentangle the altruistic ultimate goal (benefiting others) and one or more possible egoistic ultimate goals (benefiting self).

One way of teasing these goals apart is to vary the situation, so that sometimes the arousal can be reduced in a less costly way than by helping. If the ultimate goal is to reduce one's own arousal, then aroused individuals should help less when they believe they'll no longer be exposed to the person in need of help. But if the ultimate goal is to reduce the other's distress, this variation should have no effect. Several experiments using this logic have supported the EAH (Batson, 2000).

These and other experiments have led to what Piliavin & Charng (1990) call a 'paradigm shift' away from universal egoism, according to which behaviour that appears altruistic always turns out to be self-interest in disguise. This paradigm shift indicates that the dominant view of human motivation – and indeed of human nature – is wrong. As Batson (2000) says:

> ... it is not true that everything we do is directed towards the ultimate goal of benefiting ourselves. It seems that we are capable of being altruistic as well as egoistic.

But according to the *empathy-specific reward* (ESR) interpretation, people only help because they expect a reward from the victim, or from others who witnessed the act, or from themselves ('empathic joy'). But Batson *et al.* (1991) found that participants who reported high levels of empathic concern (and were, presumably, altruistically motivated) showed high levels of helping regardless of

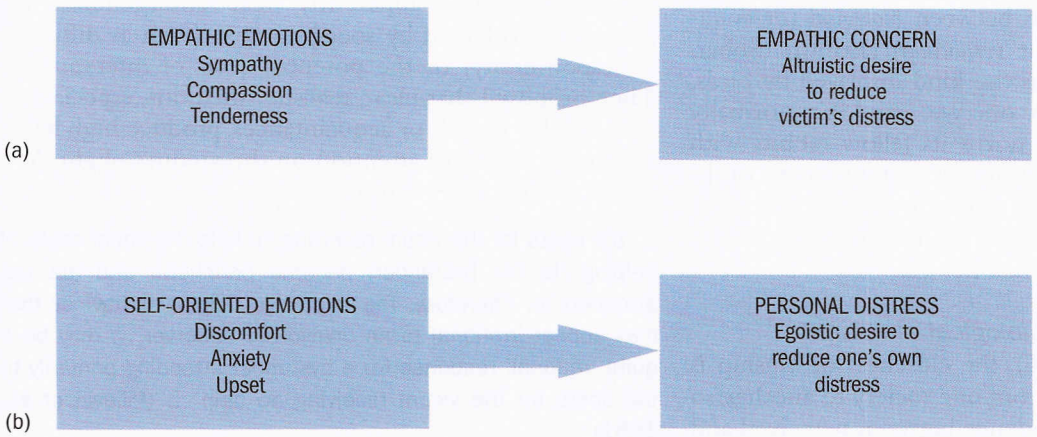


Figure 30.5 Summary of (a) the empathy–altruism hypothesis, and (b) the universal egoism account of helping behaviour

whether they'd have the opportunity to experience empathic joy. In reviewing this and other egoistic challenges to the EAH, Dovidio & Penner (2004) conclude that:

> ... the preponderance of evidence from the 20 or so years of experimentation on this question strongly suggests that truly altruistic motivation may exist and all helping is not necessarily egoistically motivated.

Universal egoism and sociobiology

If, according to universal egoists, all human acts of apparent altruism are really driven by self-interest, we might not be surprised to find a similar interpretation of the equivalent behaviours in non-human animals. There are many examples of apparently altruistic behaviour in non-humans, including the feet-drumming rabbits that we mentioned at the beginning of the chapter. This is referred to as the *paradox of altruism*.

Box 30.2 The paradox of altruism

- From a Darwinian perspective, altruistic behaviour isn't adaptive. This is because it reduces the likelihood that an individual who raises an alarm will survive: the predator is likely to be attracted to that individual.
- According to sociobiologists, this '*paradox of altruism*' can be resolved if apparently altruistic behaviour is viewed as selfish behaviour 'in disguise' (see Chapter 2).
- Sociobiologists argue that an individual animal should be seen as a set of genes, rather than a separate 'bounded organism', and that these 'selfish genes' (Dawkins, 1976) aim to secure their own survival. (See Gross *et al.*, 2000.)

Theories that explain the apparently altruistic behaviour of non-humans can, at least for sociobiologists, be applied to humans (Wilson, 1978: see Chapter 2 and Clamp, 2001).

Biological and psychological altruism

The sociobiological explanation of altruism fails to make the fundamental distinction between *biological* (or *evolutionary*) and *psychological* (or *vernacular*) altruism (Sober, 1992). Biological altruism is the kind displayed by birds, bees, ants, rabbits, and so on. We wouldn't normally attribute the rabbit which warns its fellow rabbits with altruistic motives or intentions: it's simply part of its biologically determined repertoire. Psychological altruism is displayed by higher mammals, in particular, primates and, especially, human beings.

Are humans capable of biological altruism?

According to Brown (1986), the closeness of kinship is construed very differently from one society to another, so there's no simple correspondence between perceived and actual (genetic) kinship. If altruistic behaviour directly reflected actual kinship, rather than learned conceptions of kinship, it would be impossible for adoptive parents to give their adopted children the quality of care they do.

As a species, much of our behaviour is altruistic, and as Brown says:

> Human altruism goes beyond the confines of Darwinism because human evolution is not only biological in nature but also cultural, and, indeed, in recent times primarily cultural.

Biological altruism and impulsive helping

However, biological altruism may be triggered under very specific conditions, such as a highly arousing emergency situation. People often display a rapid, almost unthinking, reflexive type of helping (*impulsive helping*) in extreme situations such as natural – and other kinds of – disasters.



Biological altruism in the 2004 tsunami disaster

Piliavin *et al.* (1981) found considerable evidence of this impulsive helping in a review of a large number of experiments involving apparently real emergencies. It's generally unaffected by social context (such as diffusion of responsibility) or the potential costs of intervention. They proposed that clear, realistic situations, especially if they involve friends or acquaintances, produce high levels of arousal and focus attention on the victim's plight. As a result, the bystander is most concerned with:

> ... the costs for the victim receiving no help. Personal costs of helping (to the bystander) become peripheral and are not attended to. Therefore, the impulsive helping behaviour that may appear irrational to an uninvolved observer ... may be a quite 'rational' response for a bystander attending primarily to the costs for the victim receiving no help ... (Piliavin *et al.*, 1981)

This description comes very close to Sober's definition of evolutionary altruism (Schroeder *et al.*, 1995). Where very close friends or loved ones are the (potential) victims, impulsive helping is even more likely to occur, because of increased arousal and sensitivity to the other's distress (Clark *et al.*, 1989).

So, both sophisticated reasoning (as in psychological altruism) and more primitive, non-cognitive, biological mechanisms may permit humans to perform a range of altruistic behaviours well beyond those of other species. According to Schroeder *et al.* (1995):

> We may well indeed be a uniquely compassionate and altruistic beast ... altruism may be both a behaviour that has evolved because it is vital to the survival of humanity and a behaviour that is learned and reinforced by most societies because it is vital to the survival of their culture.

THE MEDIA AND PROSOCIAL BEHAVIOUR

Television and prosocial behaviour

If television can have harmful effects as a result of watching antisocial behaviour (see Chapter 29) then, presumably, it can have beneficial effects by promoting prosocial behaviour. According to Gunter & McAleer (1997):

> Concern about the possible antisocial influences of television far outweighs the consideration given to any other area of children's involvement with television ... Television programmes contain many examples of good behaviour, of people acting kindly and with generosity. It is equally logical to assume that these portrayals provide models for children to copy.

Box 30.3 Evidence for the prosocial effects of TV

- **Laboratory studies with specially produced instructional film or video materials:** Specially prepared materials have been shown to influence courage, the delay of gratification, adherence to rules, charitable behaviour, friendliness, and affectionate behaviour.
- **Laboratory studies with educational broadcasts specially produced for social skills teaching purposes:** TV productions designed to enhance the social maturity and responsibility of young viewers include *Sesame Street* and *Mister Roger's Neighborhood*. Children who watch these programmes are able to identify and remember the cooperative and helping behaviours emphasised in certain segments.
- **Laboratory studies with episodes from popular TV series:** Specially manufactured TV programmes or film clips influence children's prosocial tendencies, at least when the prosocial behaviour portrayed is very similar to that requested of the child. But there's only limited evidence that ordinary broadcast material can enhance a wide range of helping behaviours.
- **Field studies relating amount of viewing of prosocial TV content to strength of prosocial behaviour tendencies:** Children who watch little TV, but watch a lot of programmes with high levels of prosocial content, are more likely than others to behave prosocially. But the correlations between viewing habits and prosocial behaviour are lower than those between viewing habits and antisocial behaviour.

  In part, this may be because prosocial behaviours are verbally mediated and often subtle, whereas antisocial behaviours are blatant and physical. Children learn better from simple, direct and active presentation, and so aggressive behaviours may be more readily learned. Also, the characters who display prosocial behaviour (typically female and non-white) and antisocial behaviour (typically male and white) may confound the relative influence of prosocial and antisocial behaviours with the types of character that portray them.

(From Gunter & McAleer, 1997; Gunter, 1998)

Television violence and catharsis

ASK YOURSELF...

- How might Freud's and Lorenz's theories of aggression explain the benefits of watching TV violence (see Chapter 29)?

One positive effect of TV might be that witnessing others behaving aggressively helps viewers to get their aggressive feelings 'out of their systems', and hence be less likely to behave aggressively. The claim that TV can act as a form of *vicarious catharsis* is based partly on Freud's and Lorenz's theories of aggression.

However, the evidence doesn't support the view that TV is cathartic for everybody. If a discharge of hostile feelings occurs at all, it's probably restricted to people of a particular personality type, or those who score high on cognitive measures of fantasy, daydreaming and imagination (Singer, 1989). Only for some people does TV violence have positive effects and provide a means of reducing aggressive feelings (Gunter & McAleer, 1990).

Computer games: good or bad?

Antisocial behaviour

According to Griffiths (1998), little is known about the long-term effects of playing violent computer games. However, great concern has been voiced that such games may have a more adverse effect on children than TV, because of the child's active involvement (Keegan, 1999). Griffiths's review of research indicates that the effects of long-term exposure to computer games on subsequent aggressive behaviour 'are at best speculative'.

However, recent research by Colwell (in Leake, 2000) claims that violent computer games are strongly linked with aggression in teenage boys, and that they're increasingly becoming substitutes for friendship. Colwell's study of 204 12–14-year-olds in London claims to have shown a causal link between playing violent games and aggressive behaviour.

Prosocial behaviour

As far as prosocial behaviour is concerned, computer games:

- give children access to 'state of the art' technology, a sense of confidence, and equip them with computer-related skills for the future (Surrey, 1982)
- may also promote *social interaction;* Mitchell (1983, in Griffiths, 1993) found that families generally viewed computer games as promoting interaction in a beneficial way through cooperation and competition
- may be cathartic in that they allow players to release their stress and aggression in a non-destructive way, and relax them (Kestenbaum & Weinstein, 1985). Other benefits include enhancing cognitive skills, a sense of mastery, control and accomplishment, and a reduction in other youth problems due to 'addictive interest'(!) in video games (Anderson & Ford, 1986).

According to Griffiths (1997a), there appear to be some genuine applied aspects of computer game-playing. But he notes that many of the assertions made above were subjectively formulated, and not based on empirical research findings.

CONCLUSIONS

In March 1984, the Catherine (Kitty) Genovese Memorial Conference on Bad Samaritanism was held. Experts shared what they had learned in the 20 years since her murder. The *New York Times* again reported on the conference:

> It's held the imagination because looking at those 38 people, we were really looking at ourselves. We might not have done anything either. That's the ugly side of human nature. [O'Connor, law professor]

> The case touched on a fundamental issue of the human condition, our primordial nightmare. If we need help, will those around us stand around and let us be destroyed or will they come to our aid? Are those other creatures out there to help us sustain our life and values or are we individual flecks of dust just floating around in a vacuum? [Milgram, psychology professor]

According to Dovidio & Penner (2004):

> ... helping is a complex multidimensional behaviour. Whether it is spontaneous and short-term or planned and sustained, helping is an evolutionarily important behaviour that is shaped by fundamental cognitive and affective processes, involves self- and other-directed motives, and has consequences that are central to one's self-image and social relationships ...

CHAPTER SUMMARY

- **Helping** as a form of **prosocial behaviour** has been studied largely in the form of **bystander intervention**. The murder of Kitty Genovese, together with early laboratory experiments, led Latané and Darley to introduce the concept of the **unresponsive bystander/bystander apathy**.
- According to Latané and Darley's **decision model**, a bystander will pass through a logical series of steps before actually offering any help. A negative decision at any step leads to non-intervention.
- The more potential helpers there are (believed to be) present, the more likely it is that **diffusion** (or '**dissolution**') **of responsibility** will take place.
- How **competent** we feel to offer appropriate help will influence diffusion of responsibility. This suggests that diffusion of responsibility *doesn't* imply apathy about what happens to the victim.
- The decision model emphasises only why people don't help, rather than why they do. The **arousal–cost–reward** (ACR) **model** is an extension of the decision model, identifying a number of critical **situational** and **bystander variables**, which help predict the likelihood of helping under particular circumstances.
- **Arousal** constitutes the **motivational** part of the model, while **cost–reward** involves the **cognitive** weighing-up of anticipated costs and rewards for both helping and not helping.
- The most common solutions to the **high-cost-for-helping/high-cost-for-not-helping dilemma** are **re-defining the situation**, **diffusing responsibility** and **blaming the victim**. These are all forms of **cognitive reinterpretation.**
- The costs of helping and not helping differ according to the **type of help required, victim characteristics** (including perceived similarity to the bystander), **bystander personality** and **gender**, and the **bystander–victim relationship**.
- Helping can be called **altruism** only if the motive is to benefit the victim (**empathic concern**). According to the **empathy–altruism hypothesis** (EAH), human beings are capable of altruistic acts, but according to **universal egoism**, helping is always motivated by **personal distress**.
- According to the **negative state relief (NSR) model**, people are motivated to help others in need by their own egoistic need to reduce/remove their state of negative arousal caused originally by the victim's plight.

- While non-humans are incapable of **psychological altruism**, humans are capable of **biological altruism** (impulsive helping), triggered by highly arousing emergency situations, especially where friends or relatives are involved.
- **Field studies** indicate that the amount of **prosocial TV content** viewed is related to the strength of **prosocial behaviour**. But this relationship is weaker than that between viewing habits and antisocial behaviour. This may be because antisocial behaviours are learnt more easily than verbal and subtle prosocial behaviours.
- Little is known about the long-term effects of playing **violent computer games**, but the child's active involvement makes them potentially more harmful than TV.
- The **benefits** of computer games could include providing an opportunity for **releasing stress** and **aggression** in a non-destructive way.

Links with other topics/chapters

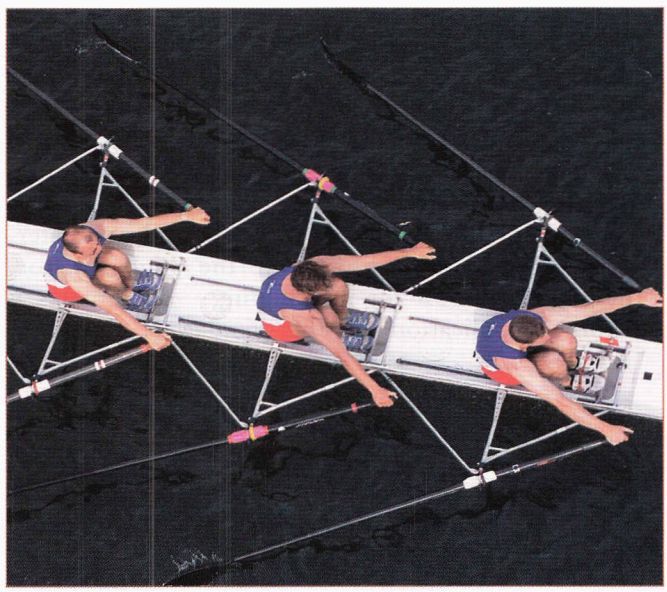
- The cost–reward component of the ACR model corresponds to the *exchange theory explanation of intimate relationships* (Chapter 28) (The arousal component is what distinguishes the ACR model from exchange theory.)
- Denigrating the victim (as a form of cognitive reinterpretation when dealing with the high-cost-for-helping/high-cost-for-not-helping dilemma) is another application of the *'just world' hypothesis* (Chapter 23).
- The three forms of cognitive reinterpretation could also be seen as *rationalisations* that reduce the bystander's *cognitive* dissonance (Chapter 24).
- Graziano & Eisenberg (1997) identify individual differences in empathy as one kind of evidence supporting the claim that personality traits can account for variance in prosocial behaviour. This complements Eisenberg's research into the *development of prosocial moral reasoning* (Chapter 35).
- *Self-efficacy* (as a personality characteristic that can make some people more likely to act prosocially than others) is also relevant to (a) Bandura's (1986, 1989) *social cognition theory of moral development* (Chapter 35), and (b) Bandura's (1977a) account of why *psychotherapy* works (*process research*) (Chapter 45).
- Typical differences between male and female helping are related to Gilligan's (1982) research into differences in their *morality/moral reasoning* (Chapter 35).
- The ACR model maintains that only arousal attributed to the victim's plight will motivate helping. This is especially relevant to Weiner's *attributional theory of motivation* (Chapter 23), as is the attribution of responsibility ('Is it the victim's own fault?'). It also relates to Schachter's *cognitive labelling theory of emotion* (Chapter 10).
- The finding that impulsive helping is more likely in the case of close friends or loved ones can be (partly) explained in terms of *familiarity* (Chapter 28) and *attachments* (Chapter 32).
- Research into the harmful effects of violent computer games, and the prosocial effects of TV, complement research into the link between *watching violent TV/movies* and *aggressive behaviour* (Chapter 29).

What is sport psychology?
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31

APPLICATION

THE SOCIAL PSYCHOLOGY OF SPORT



INTRODUCTION AND OVERVIEW

As we saw in Chapter 30, sociobiologists believe that an individual animal should be seen as a set of genes, and that these *selfish genes* (Dawkins. 1976) aim to secure their own survival. This view of evolution implies that there's no such thing as society: sociobiologists have ridiculed the idea that *groups* of organisms might gain a survival advantage over other groups because they shared some beneficial trait.

However, biologists are starting to understand that evolution takes place on a variety of levels (Dicks, 2000). Natural selection may favour certain genes, but it can also favour particular societies. Provided a group of individuals can cooperate without any cheats trying to sneak an unfair advantage, then it may evolve as a single unit. Indeed, Darwin's solution to the *paradox of altruism* was to suggest that natural selection operates among groups of organisms (see Chapter 30). As Dicks puts it:

> A group of people who are kind and helpful to each other may not do so well individually, but as a team they may do better than other groups of people, and so the tendency to work as a team spreads through the population.

While not all sport is team sport, of course, applications of social psychology to sport tend to focus on *group processes* (see Chapter 26), such as *social facilitation*, factors affecting group performance (such as *social loafing*), and *group cohesion*.

WHAT IS SPORT PSYCHOLOGY?

Walley & Westbury (1996) define sport psychology as the:

> ... scientific study of human behaviour and experience in sport (where ... 'sport' is used to cover various levels of recreational activities, competitive sports, and health-oriented exercise programmes) ...

Triplett's (1898) study of social facilitation (see below) is often cited as the first experiment in social psychology, but on closer inspection it had stronger links with psychophysiology and sport psychology (Hogg & Vaughan, 1998). Indeed, sport psychology is generally seen as having started with Triplett's study (Hardy, 1989). But it first became recognised as an academic discipline in the UK in the late 1960s, going from strength to strength since the early 1980s, with the psychology content of sports science degrees gradually increasing. However, it wasn't until 1992 that the British Psychological Society acknowledged sport psychology by forming an interest group. A fully fledged Sport and Exercise Psychology Section was established in 1993. The aim is for this to become a Division (Cockerill, 2002).

The British Association of Sports Sciences has set up a register of sport psychologists. To become registered, sport psychologists are normally expected to have a first degree in sports science and a higher degree in psychology – or vice versa. Many sports-governing bodies require trainee coaches to attend short courses and workshops aimed at increasing awareness of the importance of sport psychology. These courses are coordinated by the National Coaching Foundation.

ASK YOURSELF...

- What do you think sport psychologists do?

The scope of sport psychology (SP)

According to Walley & Westbury (1996):

> The image that many people have of a sport psychologist is someone who comes in to 'psych up' players before a game, the purpose being to make them more competitive or even aggressive ...

They believe this image is very misleading.

Box 31.1 Different areas of work involving sport psychologists

Clinical sport psychology: Trained clinical psychologists (see Chapter 1) deal with performers' emotional and behavioural problems. Several Olympic-standard US and British performers have been successfully treated for a range of problems, including acute anxiety, eating disorders, depression, and obsessive–compulsive behaviour (see Chapter 44).

Research sport psychology: This is a largely applied area of research, concerned with real-life problems confronting coaches and players. Researchers also try to ensure that their findings are made available not just to the academic community, but also to coaches, athletes, and teachers. Some of the issues addressed are how stress affects performance, what factors affect performers' decision to drop out of sport, and how complex skills are learned and controlled.

Education sport psychology: This aims to teach participants in sport mental skills which will enhance both their performance in, and enjoyment of, sport. Sport psychologists may be consulted on:

- how to manage performance-related stress and anxiety
- how to increase and maintain self-confidence
- how to use mental rehearsal to facilitate learning of skills
- team-building
- coach education.

British SP reflects international trends. Some additional research areas include the following.

- Identification of factors that determine peak performance, such as stress (see Chapter 12), motivation (see Chapter 9), and mental preparation. The role of stress in athletic performance grew out of the early interest in social facilitation (see below). According to Hardy (1989):

  > Competitive athletes ... may represent an invaluable microcosm within which we may test and refine our understanding of human adaptation. The athlete must learn to cope with a wide range of stressors – performance standards, the experience of failure, ageing and so on. In evaluating our theories and developing new treatment techniques, the athlete may, therefore, be an able and willing ally ...

- Skill development (including in children and performers with special needs).
- Psychological effects of participation in sport, and exercise and sport as a means of promoting health.
- Identification of personality factors underlying elite performance and attraction to different sports (very popular in the late 1960s and early 1970s: see Chapter 42).

Zuckerman's (1979) *sensation-seeking scale* has attracted quite a lot of attention and has been successful in predicting leisure preferences and participation. The high sensation-seeker displays a need for varied, novel sensations, and appears willing to take physical and social risks to gain these experiences (Furnham & Heaven, 1999). As predicted by Zuckerman's scale, white-water canoeists and kayak paddlers showed higher than average scores (especially on the thrill and adventure-seeking sub-scales: Campbell *et al.*, 1993). Also, athletes scored higher than non-athletes, contact sports athletes scored higher than non-contact sports athletes, and male athletes scored higher than female athletes (Schroth, 1995).

Box 31.2 T types and the adrenaline rush

- *Type T* (for 'thrill') *personalities* thrive on taking risks (Farley, in Schueller, 2000b).
- The most visible members of the type T group today are the extreme athletes, such as the hang-gliders, bungee jumpers, and those who jump off tall buildings. For example, Kristen Ulmer considers herself to be a full-time 'adrenaline sports' athlete. As well as being voted the craziest skier in North America, she rock climbs, paraglides, and dabbles in ice climbing and mountain biking.



- But Farley believes that you can get an adrenaline rush without jumping off a building or hang-gliding. It can come from sex or gambling (see Chapter 8), and those who push the frontiers of the mind rather than the body are also thrill-seekers. Adrenaline surges have been recorded during chess tournaments, and Farley cites Einstein as a mental T type. Type Ts need to push their abilities –physical or intellectual – to the limits.
- What makes a type T may be at least partly due to 'thrill-seeking' genes, which affect dopamine receptors in the brain (see Chapter 4).
- Farley believes that human progress demands risk-taking. There's a very simple motive underlying creativity, risk-taking, exploring, and adventure; namely, thrill.

(Based on Schueller, 2000b)

According to Moran (2000), the traditional role of the sport psychologist as expert is giving way to a new model for the delivery of sport psychological services:

> ... this model identifies the coach rather than the athlete as the primary target for psychological education. Accordingly, the role of the sport psychologist changes from that of a medical expert to that of a management consultant – somebody who works as part of a team with the coach/manager and the support staff ...

Of course, this model doesn't eliminate the need for individual consultation; there'll always be situations which warrant one-to-one interactions between athletes and sport psychologists. But for Moran:

> ... what does change in this new approach is the expectation that sport psychologists are 'mind-benders' who provide some arcane expertise to athletes who are beyond the help of their coaches ...

It's only when such myths are dispelled that either theoretical or practical progress in SP is possible.

The status of sport psychology

According to Woods (2001), SP is now a recognised academic discipline, but exactly where it belongs is a matter of debate. She identifies two major views of its role.

1. According to one view, SP is a *sub-discipline of mainstream psychology,* based on its theories, models and research methods. But sport psychologists have found it difficult applying mainstream ideas to the reality of the sport setting. As a result, for the last 20 years or so research has moved increasingly towards a focus on the experiences of athletes themselves. This has revealed fascinating material on competitive anxiety, self-efficacy, how anxiety and arousal interact in competition, and 'home team' advantage.
2. This more recent research is related to the second view of SP as a *sub-discipline of sport science* (which also includes motor skills, biomechanics and nutrition). The inclusion of SP would strengthen the inter-relationship between sports-related topics, and could promote the development of research hypotheses and methods appropriate to the sport setting.

Athletes and coaches at all levels are becoming increasingly aware that to enjoy the benefits sport has to offer:

> ... success does not only depend on a sound technique and being fit enough to execute the skills that have been learned. It also relies upon the acquisition of certain psychological skills, such as motivation and commitment, being able to perform under pressure, coping with adversity, effective organisation, and many others ... (Cockerill, 2002)

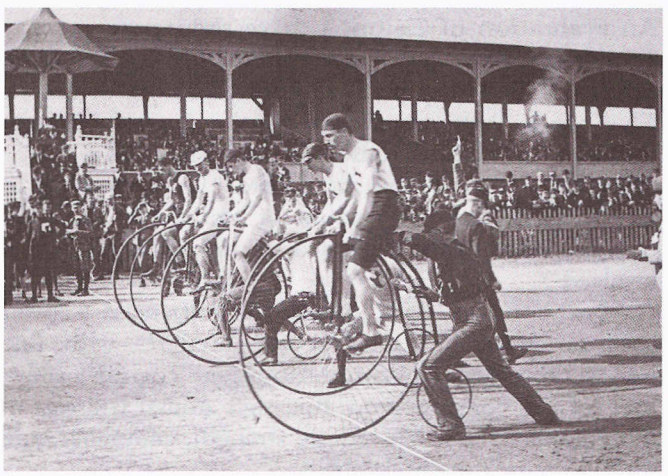
However, Cockerill believes that SP is still regarded within some sports, and by some individuals, as an irrelevance, and the so-called 'macho' culture of sport may exaggerate such perceptions.

SOCIAL FACILITATION

Triplett's research

As we noted earlier, Triplett (1898) carried out what's widely considered to be the first social psychology experiment. But it seems to be at least as relevant to SP.

Cycling had increased enormously in popularity in the last decade of the nineteenth century, both as a pastime and a sport. Triplett's interest was stimulated by the common observation that racing cyclists go faster when racing or being paced than when riding alone (Hogg & Vaughan, 1998).



Competition can increase speed regardless of the kind of bicycle being ridden

ASK YOURSELF...
- Why do you think this effect might occur?

Triplett identified various possible explanations for this superior performance:

- the pacer in front produces a suction to pull the rider behind along, helping to conserve energy and providing shelter from the wind
- a 'brain-worry' theory, popular at the time, predicted that solitary cyclists did poorly because they worried about whether they were going fast enough. This exhausted their brain muscles!
- friends usually rode as pacers and probably encouraged the cyclists to keep up their spirits
- in a race, a follower might be hypnotised by the wheels in front, thus riding automatically and leaving more energy for a later, controlled burst
- a *dynamogenic theory* (favoured by Triplett) proposed that racing another person aroused a 'competitive instinct', which released 'nervous energy' (similar to arousal). The sight of movement in another rider suggested a higher speed and inspired greater effort. The energy of a movement was proportional to the idea of that movement. (It was believed at the time that to perform an action or movement, there first had to be an 'idea' of that action/movement; the idea 'suggested' the action/movement to be performed).

KEY STUDY 31.1 Is this a wind-up or a social psychology experiment? (Triplett, 1898)
- In his most famous experiment, 40 boys and girls aged 8 to 17 were tested under two conditions: working alone and working in pairs, each child competing against the other member of the pair.
- The apparatus consisted of two fishing reels, which turned silk bands around a drum (a 'competition machine'). Each reel was connected by a loop of cord to a pulley two metres away, and a small flag was attached to each cord. To complete one trial, a flag sewn to the silk band had to travel four times around the wheel.
- Some of the children were slower when competing against another child, most were faster, and others little affected.
- The faster children showed the effects of both 'the arousal of their competitive instincts and the idea of a faster movement'. The slower ones were overstimulated or 'going to pieces'.

In expanding on the dynamogenic theory, Triplett emphasised the ideo-motor responses; that is, the effects of one child's bodily movements acting as a cue for another child. These are essentially *non-social*. According to Hogg & Vaughan (1998), 'What is clear is that Triplett himself cannot be considered a social psychologist'. So, while Triplett's experiment is often cited as a (very early) study of social facilitation, it's not strictly a social psychological study at all.

Allport's research

According to Floyd Allport (1924), Triplett's narrow view of the role of competition could be broadened to include a more general principle: an improvement in performance can be produced by the mere presence of *conspecifics* (members of the same species). This is a form of influence he called *social facilitation*.

Allport instructed his participants not to try to compete against one another (and also prevented any collaboration) while engaging on a variety of tasks. These included crossing out all the vowels in a newspaper article, multiplication, and finding logical flaws in arguments. He found they performed better when they could see others working than when they worked alone, and he called this form of social facilitation the *co-action effect*.

Social facilitation also occurs when someone performs a task in front of an audience, that is, other people who aren't doing what s/he is doing. This is the *audience effect*. Other studies have shown that social facilitation can occur by simply telling participants that others are performing the same task elsewhere (Dashiell, 1935).

For the sportsperson, the fact that the presence of others may improve or impair performance is of considerable interest. Although most of the research has taken place in non-sports settings, it still has a direct bearing on sports situations (Woods, 1998).

ASK YOURSELF...

- In your own experience, do you 'perform' better when there are other people around?
- Does it matter that they're engaged in the same task as you?
- Might an 'audience' inhibit you?
- How is all of this affected by the particular task you're engaged in?

Explaining social facilitation

Zajonc's drive theory

The considerable research interest in social facilitation (much of it involving a range of species and a range of behaviours, from eating to copulation) died down at the end of the 1930s. But it was revived by Zajonc's (1965) *drive theory,* according to which social facilitation depends on the nature of the task, in particular, how simple and well learned it is. According to Zajonc:

> ... an audience impairs the acquisition of new responses and facilitates the emission of well-learned responses.

In other words, things a person already knows how to do (such as cancelling numbers and letters, and simple multiplication) are done *better* when others are present, but things which are complex or which participants are required to learn are done *less well* when others are present. These findings have been confirmed by others. But why?

Because people are relatively unpredictable, there's a clear advantage to the species for their presence to induce in us a state of alertness or readiness. So, an instinctive response to the presence of others (in whatever capacity) is an increase in drive level (or level of arousal). This, in turn, energises (causes us to enact) our *dominant responses,* that is, our best learned or habitual responses in that situation. On subjectively simple tasks (those considered to be simple by the performer), those dominant responses are likely to be correct. Hence, the presence of others will facilitate performance on simple tasks (*task enhancement).*

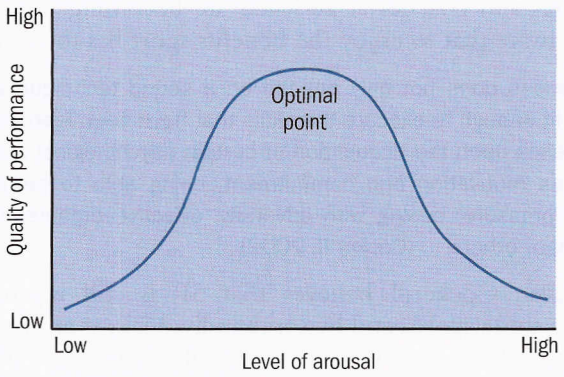


Figure 31.1 Graph showing the inverted U relationship between arousal and performance

However, when the task is complex, the effect of increased arousal is to make it more likely that incorrect or irrelevant responses will be performed and, hence, more errors are made (*task impairment*). The arousal produced by the presence of others, together with that produced by the task itself, produce a level beyond the optimum for ideal performance.

An evaluation of Zajonc's drive theory

Some critics have argued that even on well-learned tasks, a skilled athlete may perform poorly in front of others. This can be better explained by the *inverted U theory* (based on the Yerkes–Dodson law (see Figure 31.1) Oxendine (1970) found an inverted U relationship in several sports, but the amount of arousal necessary for optimal performance depended on the *nature of the skill* involved.

More complex skills (putting in golf) need a lower level of arousal, because arousal interferes with fine muscle movement and coordination, and cognitive activities such as concentration. But high arousal is useful in less complex skills that require strength, endurance, and speed (like tackling in football).

Many skills involve both strength and complexity, which are difficult to separate out (Jones & Hardy, 1990). For example, preparing to putt requires low muscle activity in the forearms, but high cognitive activity, while performing a maximum bench press in gym requires high muscle activity in the forearms and lower cognitive activity.

Open and closed skills

According to Woods (1998), arousal can be more detrimental to performance of open than closed skills.

- *Open skills* are performed in an unpredictable environment, so they make more cognitive demands on the

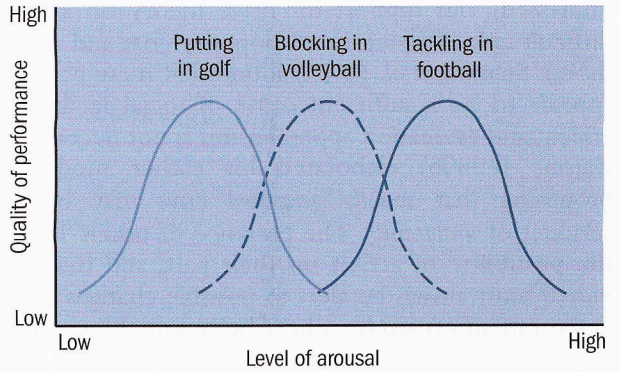


Figure 31.2 Graph showing the relationship between level of arousal and level of performance in three skills

performer. The environment is constantly changing and players don't know what will happen; they have to make rapid decisions about what to do and when to do it.

ASK YOURSELF...
- Give an example of an open skill.

An example is that of a basketball player who has to be able to control the ball while noting the movement of team-mates and opposing players, as well as making tactical decisions. Dribbling a basketball is best learned by practising under a variety of conditions, so that it can be performed effectively whatever the circumstances.

◎ *Closed skills* are performed in a constant, predictable environment, so the performer knows in advance what to do and when to do it. Learning involves refining the skill until it's as perfect as possible, and then repeating it until it can be performed automatically (it becomes *habitual*).

ASK YOURSELF...
- Give an example of a closed skill.

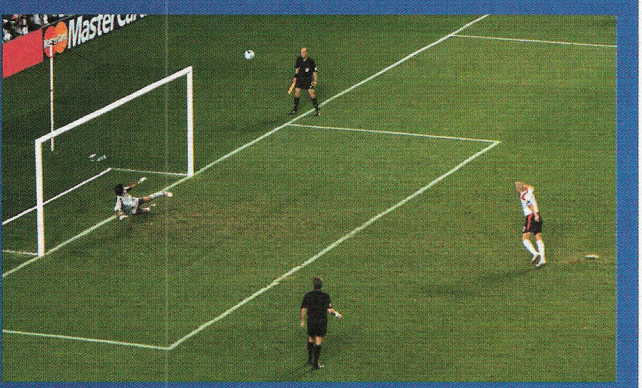
A gymnast starting a routine is performing a closed skill, which is self-paced. But closed skills may also occur in an 'open' situation. For example, a netball player taking a penalty shot is performing a closed skill, but she must take account of environmental factors, such as the position of other players and likely rebounds. So, the penalty shot cannot be purely habitual and has some characteristics of an open skill (Woods, 1998).

Level of expertise

To perform well, someone just learning a sport should experience only very low levels of arousal. But the experienced performer will need much higher levels in order to achieve optimum performance. Because the learner's skills aren't yet automatic, s/he uses cognitive abilities to direct, monitor and control them. Any additional arousal may interfere with concentration, reducing the ability to control the skill successfully.

Box 31.3 The 'yips'

- This refers to the sudden, catastrophic breakdown in skilled performance. This rather strange phenomenon is characterised by an inability to perform a well-learned, well-practised skill ('choking' under pressure: Baumeister, 1984). It seems to strike suddenly from nowhere to debilitate an athlete severely – for months, years or even a whole career.
- In golf, it's been described as 'jerks, tremors or spasms' affecting the lower arm (Smith *et al.*, 2000). Similar phenomena seem to occur in other sports where precision and fine motor control are at a premium, such as cricket (especially bowling), tennis, snooker and darts. Eric Bristow is a prime example. At the height of his darts career, he found one day that he was unable to release the dart from his fingers. It took him ten years to recover.
- The yips has been explained by the *'catastrophe' model of performance in sport* (Fazey & Hardy, 1988). This predicts that there may be a sudden 'catastrophic' breakdown in performance (resulting from interactions between cognitive anxiety and physiological arousal), from which the athlete may find it difficult to recover.
- But the problem may have a neuromuscular, as well as psychological, origin. For example, 'focal dystonia' describes a similar condition among musicians and typists, originating from prolonged repetitive movements and abnormal pressure ('repetitive strain injury'). Over the course of a sporting career, it's certainly possible that an athlete will have performed similar repetitive movements *thousands*, even *hundreds of thousands*, of times (Graydon, 2002).



David Beckham's famous penalty shoot-out miss against Portugal in Euro 2004

- According to Baumeister (1984), the pressure to perform can make performers self-conscious, directing their conscious attention to the control of a motor skill

that is usually performed 'unconsciously' (automatically). Under pressure, the skilled performer (for whom the skill 'just happens') reverts to the level of a novice (who needs to 'talk his/her way through it'). This destroys the skill's *fluidity*: 'Intriguingly, perhaps you have to be an expert before a catastrophe can occur' (Graydon, 2002)

Personality

Performers with *low impulsivity* (low *extroversion/E* and low *neuroticism/N:* see Chapter 42) tend to be more highly aroused during the early part of the day. By contrast, those high on impulsivity are more highly aroused later in the day. This has implications for performance. For example, athletes rated high on impulsivity will need to use more relaxation and stress-reduction strategies when running in an evening compared with a morning race (Woods, 1998).

Cottrell's evaluation apprehension model (EAM)

Cottrell *et al.* (1968) found no social facilitation effect on three well-learned tasks when the two-person audience was inattentive (blindfolded) or merely present (only incidentally present, while supposedly waiting to participate in a different experiment). However, a non-blindfolded audience that carefully attended to the participant's performance, and had expressed an interest in watching, did produce a social facilitation (audience) effect.

According to Cottrell's (1968) *evaluation apprehension model* (EAM), it's *not* the presence of other people that increases arousal (as Zajonc's drive theory claims), but *apprehension* about being evaluated by them. We quickly learn that the social rewards and punishments (such as approval and disapproval) are dependent on others' evaluations of us, so the presence of others triggers an *acquired arousal drive* based on evaluation apprehension.

An evaluation of Cottrell's model

- If we're confident about our ability, then the awareness of being watched makes us perform well, but if we're not confident, then we're constantly worrying about how others are evaluating us.
- Cottrell *et al.* also showed that the more expert the audience, the more performance was impaired (the greater the evaluation apprehension).

ASK YOURSELF...

- Have you had personal experience of this (not necessarily in an athletic context)? (Consult the answers you gave to the previous *Ask Yourself* box – page 531.)

- Markus (1978) found support for Cottrell on an easy task (dressing in one's own clothes, having first undressed), but support for drive theory on a more difficult task (dressing in a laboratory coat and special shoes). Schmitt *et al.* (1986) found that mere presence appears to be a sufficient cause of social facilitation effects, and evaluation apprehension is not necessary.
- Zajonc (1980b) elaborated his earlier model by proposing that *socially generated drive* may be the product of *uncertainty.* The presence of others implies the possibility of action on their part, and the individual must always be alert to possible changes in the environment caused by others' behaviour. Uncertainty may be caused by the inability to anticipate how they'll act (Geen, 1995).

Baron's distraction–conflict theory (DCT)

The amount of information we can attend to at the same time is limited (see Chapter 13). Little attention is needed to perform an easy task, but more is needed for a complex one. According to Baron's (1986) *distraction–conflict theory* (DCT), while distraction alone can impair task performance, attentional conflict can also induce a drive that facilitates dominant responses. Together, these processes improve performance of easy tasks, but impair performance of difficult ones. The presence of other people makes demands on our attention, which can either impair or enhance performance, depending on the nature of the task.

Attention overload causes people to narrow their attention and focus on a small number of central cues. Complex tasks require attention to a large number of cues, so attention narrowing is likely to impair performance. On simple tasks (which involve few central cues), attention narrowing eliminates distraction and is likely to improve performance. This corresponds to Manstead & Semin's (1980) distinction between *controlled* and *automatic task performance* (see Box 31.3).

An evaluation of distraction–conflict theory

- Sanders *et al.* (1978) had participants perform easy and difficult tasks, either alone or co-acting with someone performing either the same or a different task. The reasoning is that someone performing a *different* task wouldn't be a relevant source of social comparison, and so distraction should be minimal. But another person performing the *same* task would be highly distracting. As predicted, participants in the same-task (*distraction*) condition made more mistakes on the difficult task and did better on the simple task, compared with the other conditions.
- Research shows that *any* form of stimulation (such as noise, movement, flashing lights) – not only the presence of other people – can produce the same facilitation or distraction effects (Hogg & Vaughan, 1998). An implication of this theory is that one way of preventing 'overload' is to cut out awareness of others and focus on the task in hand (Woods, 1998).

Non-drive explanations

The theories discussed above differ as to whether the drive is considered to be an innate response to the mere presence of other people, or a learned response based on evaluation apprehension or the product of attentional conflict. Although these are the best established and most extensively researched explanations, they aren't the only ones.

According to *self-awareness theory* (Carver & Scheier, 1981; Duval & Wicklund, 1972; Wicklund, 1975), we compare our actual selves (actual task performance) and ideal selves (how we'd like to perform: see Chapters 33 and 42). The discrepancy between them motivates us to close the gap. So, on easy tasks there's improved performance, but on difficult tasks the discrepancy may be too great and people give up trying, resulting in poorer performance. Self-awareness can be produced by co-actors, audience, or simply looking in a mirror.

An evaluation of explanations of social facilitation

- There are many different accounts of what might originally have seemed a rather basic, straightforward social phenomenon. Some have fared better than others, and many questions remain unanswered.
- Nevertheless, the study of audience effects remains an important topic for social psychology (Hogg & Vaughan, 1998).
- However, in a meta-analysis of social facilitation experiments involving over 24,000 participants, Bond & Titus (1983) concluded that the mere presence of other people accounted for no more than 0.3–3.0 per cent of the variation in performance.

Social facilitation in a sports setting

Most of the research described above has involved passive, and unbiased, audiences. But in a sports context, the 'audience' is usually far from unbiased. Rather, it's composed of active, often passionate, supporters.



Patriotic British tennis fans at Wimbledon

While research involving 'real' audiences is rare, one relevant area of research has looked at 'home advantage'.

Box 31.4 Does playing 'at home' improve or impair performance?

- For the major sports in the USA, teams win more home than away matches. This is true even when the visitors' 'away disadvantage' (such as the effects of travel and lack of familiarity with the ground) has been taken into account.
- Home advantage may be more important in the early rounds of a competition.
- When defending champions play at home, there's more chance of the home team cracking under the pressure.
- Home advantage is greater in sports such as basketball, where supporters are closer to the players. It's the intimacy with the crowd – not its size – which has most effect.

(Based on Woods, 1998)

ASK YOURSELF...

- If you support a football or rugby team, for example, check their results for last season. Did they perform better at home or away? (The chances are that unless they either won the championship or got relegated – in which case they probably performed consistently well or badly home and away – they did better at home.)
- How might the theories of social facilitation discussed above account for the various findings reported in Box 31.4?

Using social facilitation in coaching

According to Woods (1998):

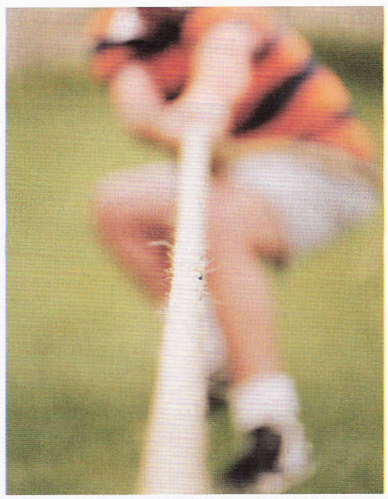
- athletes who train alongside others are likely to put more effort into routine tasks, such as warm-ups
- when learning a new skill, it's preferable to keep observers away
- athletes should be encouraged to learn techniques that minimise the effect of distractors (other people, noise, heat, and so on); some techniques that help in the management of arousal include relaxation, imagery and self-talk.

INFLUENCES ON GROUP PERFORMANCE

Social inhibition

The Ringelmann effect

Can the presence of others have an *inhibiting* effect on performance, as well as a facilitating effect? Several years after Triplett's experiments, Ringelmann, a French professor of engineering, reported a series of studies in which the presence of others seemed to produce a loss



How hard he pulls depends on how many others are pulling

in motivation. (The studies had actually been conducted prior to Triplett's research, so strictly speaking these are the very first experiments in social psychology: Geen, 1995; Smith, 1995.) Ringelmann found that the more members there were in a tug-of-war team, the less hard each member pulled; that is, as the size of the group increased, so the amount of force exerted per person decreased (the *Ringelmann effect*). He explained this largely in terms of a loss of physical coordination, but he conceded that loss of motivation could also be involved.

Social loafing

Latané *et al.* (1979) revived the Ringelmann effect under the name of *social loafing*. Early demonstrations involved simple physical acts, such as shouting and hand-clapping, individually or in groups, with the general result that the intensity of output per person declined as additional members were added. For example, when participants were asked to cheer and clap as loudly as possible, the amount of noise produced per person (compared with individual performance) dropped by 29 per cent in a pair, 49 per cent in a four-person group, and 60 per cent in a six-person group.

Social loafing can be defined as the tendency for individuals to work less hard (to loaf) on a task when they believe that others are also working on the task, and that one's own effort will be pooled with that of the other group members, compared with either working alone or co-actively (where others are doing the same task but independently of each other). According to Geen (1995), the data are consistent with one of the major claims of *social impact theory* (Latané & Nida, 1980). This states that when a person is a member of a group subjected to social forces, the impact of those forces on each person in the group is diminished in inverse proportion to the number of people in the group – the larger the group, the smaller the impact.

Later studies have shown the effect to be very reliable and general, occurring in both physical and cognitive tasks, in laboratory and naturalistic settings, in both genders and in several cultures. However, a review by Karau & Williams (1995) concluded that gender and culture appear to moderate people's tendency to loaf. Although men and women in different cultures are susceptible to loafing, the effect is smaller for women than men, and for people living in Eastern cultures. Both women and people living in Eastern cultures tend to be more group- or collectively oriented in their thinking and behaviour (see Chapters 35 and 47).

Explanations of social loafing

Geen (1995) identifies four main explanations: *'free-riding', equalisation of perceived output, evaluation apprehension,* and *matching to standard.*

- *Free-riding* (Kerr, 1983) occurs when each member of a group perceives that there's a high probability that some other group members will solve the problem at hand, and that the benefits from this person's performance will go to all members. Each individual concludes that his/her contribution is dispensable, and so puts little effort into the group task. As a result, the importance of individual effort decreases as the size of the group increases.
- Related to this is the equalisation of perceived output (or the *sucker effect*): if people expect their fellow group members to become free-riders ('goof off'), they may respond by loafing in an effort to bring equality to an inequitable situation ('Why should I make more effort than the others?' or 'I'm no sucker'). This is sometimes called the *output equity hypothesis* (McIlveen, 1995). Men seem to dislike the sucker role more than women.
- *Evaluation apprehension,* as we saw earlier when discussing social facilitation, refers to anxiety about how others will judge us. If, as has been claimed, the tasks commonly used in social loafing studies are boring and meaningless, people will try to avoid doing them. If the efforts of group members are pooled, individuals can remain anonymous ('hide in the crowd', which is very similar to free-riding). It follows that making each person's contribution identifiable should eliminate social loafing.

  Williams *et al.* (1981) simply informed participants that their shouting responses would be identifiable to the experimenter, and, as predicted, they shouted as loudly in groups as when alone. This suggests that participants become apprehensive about being evaluated by the experimenter. This is especially likely when participants believe their performance is being *compared* with that of their co-actors performing the same task. They are, effectively, in competition. The higher the level of evaluation apprehension, the lower the level of social loafing (Harkins & Jackson, 1985).

- *Matching to standard* assumes that apprehension over the possibility of being evaluated by the experimenter causes the participant to match a standard for performance set by the experimenter (and that this matching is avoided under conditions that allow social loafing). According to Szymanski & Harkins (1987), the explicit statement of a standard relevant to the activity is sufficient to reduce social loafing.

Implications of social loafing for sports coaches

ASK YOURSELF...
- Based on the social loafing research discussed above, what advice would you give sports coaches?

According to Woods (1998), social loafing is essentially the result of a decrease in motivation. While 'There's no 'I' in 'team'' is a well-worn sporting cliché, she believes that research on social loafing shows that coaches ignore the 'I' at their peril. For Woods:

> Group goals are achieved by individuals, so it is important to identify individual behaviours which help group performance and try to encourage those behaviours. Monitoring and feedback on performance (to both individuals and the group) are better than feedback only on group performance ...

Group cohesion

ASK YOURSELF...
- How would you define a 'team'?
- Is it more than just the sum of the individual members (as with any group)?
- Apart from their skill levels, how do teams differ from each other?

According to Hogg & Vaughan (1998), *group cohesion* (or *cohesiveness*) is one of the most basic properties of a group, and is otherwise known as solidarity, *esprit de corps,* team spirit, or morale. For Hogg and Vaughan, a cohesive group or team is:

> ... the way it 'hangs together' as a tightly knit, self-contained entity characterised by uniformity of conduct and mutual support among members ...

Cohesion can vary between groups, contexts, and across time. Groups with extremely low levels of cohesion hardly appear to be groups at all, and so the term may capture the very essence of being a group: the psychological process that transforms a collection of individuals into a group.

Festinger (1950) defined cohesiveness as a field of forces acting on the individual deriving from the attraction of the group and its members, and the degree to which the group satisfies individual goals. Cohesiveness is responsible for the continuity of group membership and adherence to group norms/standards.



Tottenham Hotspur's triumphant Worthington Cup winning team, 1999

According to Hogg (1992), most research defines cohesiveness in terms of attraction to the group and interpersonal attraction. Factors which increase interpersonal attraction (such as similarity, cooperation, interpersonal acceptance and shared threat: see Chapter 28) generally increase cohesiveness. This, in turn, causes, or is associated with, conformity to group norms, accentuated similarity, improved ingroup communication, and increased liking.

Personal vs social attraction

Hogg (1992, 1993) proposed a distinction between *personal attraction* (true interpersonal attraction based on close relationships) and *social attraction* (inter-individual liking based on common group membership). As Hogg & Vaughan (1998) say:

> Personal attraction is nothing to do with groups, while social attraction is the 'liking' component of group membership ...

ASK YOURSELF...
- How might social attraction be understood in terms of *self-identity theory* (SIT: see Chapter 25)?
- In what other ways might SIT be relevant to understanding group cohesiveness?

Attraction is one of a large number of effects produced by *self-categorisation,* as specified in self-identity theory (SIT). One advantage of this distinction between personal and social attraction is that group cohesiveness isn't reduced to interpersonal attraction, and it also applies equally to small interactive groups and to large-scale social categories (such as 'ethnic group' and 'nation').

Hogg & Hardie (1991) gave questionnaires to a football team in Australia. Perceptions of team *prototypicality* (the typical/ideal defining features of team members) and norms were significantly related to measures of group-

based social attraction, but *not* to measures of interpersonal attraction. This differential effect was strongest among members who themselves identified most strongly with the team. Similar findings were obtained with netball teams (Hogg & Hains, 1996).

Task vs social cohesion

Athletes often report that team cohesion is a source of satisfaction in their lives. Yet there is conflicting evidence as to whether the most cohesive teams are always the most successful. This is related to whether teams have been analysed in terms of:

- *task cohesion* – the degree to which group members work together and are committed to achieve common goals, such as winning a match, or
- *social cohesion* – the degree to which group members like each other and get on well, trust, and support each other.

These two aspects/dimensions are independent of each other. You might be very committed to achieving your team's goals, but not be particularly attached to the other team members. A team in which members get on well and are very committed to achieving common goals is at the *performing* stage of group development (Tuckman, 1965). This team may be successful. But equally, a team in which there are major disputes (and which is at the *storming* stage: Tuckman, 1965) could do well if there's a high degree of commitment to the common goal (Woods, 1998).

Factors associated with group cohesion

Type of sport

In *interactive* sports, such as football, the cohesive team (where members rely on each other to perform successfully) tends to be more successful. But in *co-active* sports, such as swimming (in which individual performance doesn't depend on others' performance), degree of cohesion seems to have little effect.

ASK YOURSELF...

- Can you relate this finding to Aronson's *jigsaw method* used to reduce racial prejudice and discrimination (see Chapter 25)?
- Analyse other sports in terms of the interactive/co-active distinction. Do some sports combine elements of both?
- Can a similar distinction be made with respect to *opponents?*

Box 31.5 Other factors associated with group cohesion

- **Group size:** The smaller the group, the greater the cohesion. This may be because there's more opportunity for members to interact, and less chance that faulty group processes will occur.
- **Similarity:** The more similar the members (in terms of status and characteristics, such as age and skill level), the greater the cohesion.
- **Success:** The more successful the team, the greater the cohesion.
- **External threats:** These may increase group cohesion by forcing members to ignore internal divisions and conflicts.

(Based on Woods, 1998)

ASK YOURSELF...

- Can you relate external threats to *common/superordinate goals,* as discussed in Chapter 25?

Factors affecting group performance

A good team is more than a group of skilled players. Members need to work together effectively in order to be successful. According to Steiner (1972), this can be expressed as:

Actual productivity = Potential productivity – Losses due to faulty group processes

In other words, to improve team performance, coaches need to increase the skills and performance of individuals (potential productivity), while reducing faulty group processes. The latter include coping with *excess arousal* and dealing with *social loafing* (both discussed above), *competitiveness,* and *poor coordination.*

Competition and cooperation

Although competitiveness is an essential part of sporting activity, cooperation is also essential, especially in team sports. In a review of the research, Johnson & Johnson (1985) concluded that cooperation produced higher standards in many more situations than competitiveness (including individual situations). But most of these studies weren't conducted in sports settings, in which competitiveness can produce exceptional effort, as well as damaging consequences. The latter may be most evident with younger or novice players, whose experience of failure in a highly competitive setting may even cause them to quit the sport. Increasingly, coaches are trying to strike a balance between these twin aspects of sport (Woods, 1998).

Coordination factors

These refer to the degree to which each player's skills are meshed together as tightly as possible, and are a central feature of interactive sports (such as football, rugby, and

volleyball). Training time should include practice in passing, timing, and the pattern of players' movements. For example, coordination between the three players involved in taking a penalty corner in hockey is crucial:

> One notices time and time again that technically superior teams ... (can be beaten because of) ... lack of concentration, careless positioning and too much improvisation in execution ... the penalty corner is grossly neglected in training, especially by club teams ... (Wein, 1985, in Woods, 1998)

Co-active sports (such as swimming and golf), where individual performance doesn't depend on others, suffer much less from coordination factors (Woods, 1998).

CHAPTER SUMMARY

- **Sport psychology** (SP) is the scientific study of human behaviour and experience in sport. This includes recreational activities and exercise, as well as competitive sport.
- While their roles overlap, it's possible to distinguish **clinical**, **research** and **education sport psychologists**. Many of the issues they address draw on areas of research in mainstream and applied psychology, such as **treatment of mental disorders**, **stress management**, **skill learning** and the role of **personality factors**.
- Zuckerman's **sensation-seeking scale** has successfully predicted attraction to sporting activities that involve high levels of risk and thrill.
- **Extreme athletes** have been described as **T types**, who may have fewer dopamine receptors in their brains. But adrenaline surges have also been recorded during more mental activities, such as chess.
- Triplett proposed a number of **non-social explanations** for why racing cyclists go faster when racing or being paced, compared with riding alone.
- Allport coined the term **social facilitation** to refer to improved performance caused by the mere presence of **conspecifics**. Two forms of social facilitation are the **co-action** and **audience effects**.
- Several explanations of social facilitation have been proposed, including Zajonc's **drive theory**, Cottrell's **evaluation apprehension model** (EAM), Baron's **distraction–conflict theory** (DCT), and **self-awareness theory**.
- There's evidence for an **inverted U relationship** between performance and arousal. This depends on the **nature of the skill** involved (such as **open/closed**), **level of expertise** and **personality**.
- The '**Ringelmann effect**' describes one way in which the presence of others can **inhibit** performance. This idea was later revived and renamed **social loafing**.
- Major explanations of social loafing include '**free-riding**', the **equalisation of perceived output/sucker effect**, **evaluation apprehension**, and **matching to standard**.
- **Group cohesion/cohesiveness** is a basic property of a group. Most research defines cohesiveness in terms of attraction, but fails to distinguish between **personal** and **social attraction**. Only social attraction is relevant to group membership as such.
- Factors affecting group cohesion include the **type of sport** (interactive or co-active), **stability**, **group size**, **similarity** and **external threats.**
- Factors affecting **group performance** include **arousal**, **social loafing**, **competitiveness**, **cooperation** and **coordination**.

Links with other topics/chapters

- Exercise is widely accepted as a means of *stress reduction,* and also has several other benefits for both *physical and mental health* (Chapter 12).
- One study of T types has found that people with certain *addictive and impulsive personality traits* have fewer dopamine receptors to record sensations of pleasure and satisfaction. This drives them to overindulge in *substances or activities* that stimulate their existing receptors (Chapters 8 and 46).
- Triplett's experiment is considered by many to be the first study of *social motivation* (Chapter 9).
- Zajonc's explanation of social facilitation is based on *Hull's learning theory* (Chapter 9).
- The Yerkes–Dodson law (1908) is concerned with the general relationship between *arousal and performance* (Chapter 7) and has been applied to the relationship between fear arousal and *attitude change* (Chapter 24).
- Evaluation apprehension is a form of *social anxiety* (Chapter 44).
- Baumeister's explanation of the yips is related to theories of *divided attention,* such as Schneider and Shiffrin's *automaticity model* (Chapter 13).
- The free-riding explanation of social loafing is similar to the *diffusion of responsibility* explanation of *bystander intervention* (Chapter 30).
- In group-oriented (*collectivist*) cultures, such as China and Japan, making the tasks more realistic and relevant to everyday life not only eliminates social loafing but reverses it. The presence of others enhances performance on the same tasks which, in more *individualist,* western cultures produce social loafing (Smith & Bond, 1993) (Chapter 47).
- Other effects produced by self-categorisation, as specified by SIT, include *stereotyping* (Chapter 22), *intergroup differentiation, ethnocentrism* and *ingroup solidarity* (Chapter 25), and *conformity* (Chapter 26).

FIVE

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Chapter summary

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32

EARLY EXPERIENCE AND SOCIAL DEVELOPMENT



INTRODUCTION AND OVERVIEW

The study of attachments and their loss or disruption represents an important way of trying to understand how early experience can affect later development. Although it was a central tenet of Freud's psychoanalytic theory that experience during the first five years of life largely determines the kind of adults we become, it's really only since the 1950s that developmental psychologists have systematically studied the nature and importance of the child's tie to its mother.

This began with the English psychiatrist John Bowlby. He was commissioned by the World Health Organization (WHO) to investigate the effects on children's development of being raised in institutions (in the aftermath of the Second World War: the photograph on the previous page shows wartime evacuees). The central concept discussed in his report (*Maternal Care and Mental Health*, 1951) was *maternal deprivation*, which has become almost synonymous with the harmful effects of not growing up within a family.

However, Bowlby has been criticised for exaggerating the importance of the mother–child relationship. There's much more to attachment than attachment to the mother. Fathers are attachment figures in their own right, as are siblings. Children's social development involves the expansion of the network of relationships to include teachers, neighbours and classmates, some of whom will become their friends.

There's now a considerable body of research into attachments beyond infancy and childhood, especially between adult sexual partners, and many psychologists have questioned the deterministic nature of the early years.

According to Schaffer (2004), whether the nature of our earliest relationships exerts as profound an influence on all subsequent close relationships as Freud suggested remains a contentious issue. But there's no question that relationship formation remains a lifelong issue, and that:

> ... relationships provide the context in which all of a child's psychological functions develop ... What is also certain is that differences among children in the nature of their relationships with others can have profound implications for the particular developmental path that each child embarks upon. Understanding relationship formation is thus an essential part of understanding child development ... (Schaffer, 2004)

THE DEVELOPMENT AND VARIETY OF ATTACHMENTS

What is sociability?

Sociability refers to one of three dimensions of temperament (the others being *emotionality* and *activity*), which are taken to be present at birth and inherited (Buss & Plomin, 1984). Specifically, sociability is:

- seeking and being especially satisfied by rewards from social interaction
- preferring to be with others
- sharing activities with others
- being responsive to and seeking responsiveness from others.

While babies differ in their degree of sociability, it's a general human tendency to want and seek the company of others. As such, sociability can be regarded as a prerequisite for attachment development: the attraction to *people in general* is necessary for attraction to *particular individuals* (attachment figures). It corresponds to the *pre-attachment* and *indiscriminate attachment phases* of the attachment process (see below).

What is attachment?

According to Kagan *et al.* (1978), an attachment is:

> ... an intense emotional relationship that is specific to two people, that endures over time, and in which prolonged separation from the partner is accompanied by stress and sorrow.

While this definition applies to attachment formation at any point in the life cycle, our first attachment acts as a *prototype* (or model) for all later relationships. Similarly, although the definition applies to any attachment, the crucial first attachment is usually taken to be with the mother.

Phases in the development of attachments

The attachment process can be divided into several phases (Schaffer, 1996a).

1. The *pre-attachment phase* lasts until about three months of age. From about six weeks, babies develop an attraction to other human beings in preference to physical aspects of the environment. This is shown through behaviours such as nestling, gurgling, and smiling, (the *social smile*) which are directed to just about anyone.
2. At about three months, infants begin to discriminate between familiar and unfamiliar people, smiling much more at the former (the social smile has now disappeared). However, they allow strangers to handle and look after them without becoming noticeably distressed, provided they're cared for adequately. This *indiscriminate attachment phase* lasts until around seven months.
3. From about seven or eight months, infants begin to develop specific attachments. This is demonstrated through actively trying to stay close to certain people (particularly the mother) and becoming distressed when separated from them (*separation anxiety*). This *discriminate attachment phase* occurs when an infant can consistently tell the difference between its mother and other people, and has developed *object permanence* (the awareness that things – in this case, the mother – continue to exist even when they cannot be seen: see Chapter 34).

Also at this time, infants avoid closeness with unfamiliar people and some, though not all, display the *fear-of-strangers response*. This includes crying and/or trying to move away, which are usually triggered only when a stranger tries to make direct contact with the baby (rather than when the stranger is just 'there').

4. In the *multiple attachment phase* (from about nine months onwards), strong additional ties are formed with other major caregivers (such as the father, grandparents, and siblings) and with non-caregivers (such as other children). Although the fear-of-strangers response typically weakens, the strongest attachment continues to be with the mother.

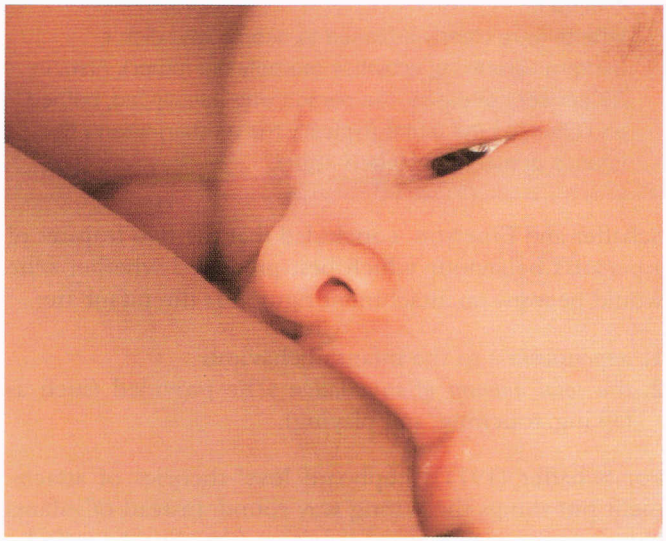
THEORIES OF THE ATTACHMENT PROCESS

'Cupboard love' theories

According to *psychoanalytic* accounts, the infant becomes attached to its caregiver (usually the mother) because of his/her ability to satisfy its instinctual needs. For Freud (1926):

> The reason why the infant in arms wants to perceive the presence of its mother is only because it already knows that she satisfies all its needs without delay.

Freud believed that healthy attachments are formed when feeding practices satisfy the infant's needs for food, security, and oral sexual gratification (see Chapter 42). Unhealthy attachments occur when infants are *deprived* of food and oral pleasure, or are *overindulged*. Thus, psychoanalytic accounts stress the importance of feeding, especially breast-feeding, and of the maternal figure.



Is this really all there is to attachment formation?

ASK YOURSELF...

- What do you think the *behaviourist* account of attachment might be? (See Chapter 11.)

The *behaviourist* view of attachment also sees infants as becoming attached to those who satisfy their physiological needs. Infants associate their caregivers (who act as *conditioned* or *secondary reinforcers*) with gratification/satisfaction (food being an *unconditioned* or *primary reinforcer*), and they learn to approach them to have their needs met. This eventually generalises into a feeling of security whenever the caregiver is present.

An evaluation of 'cupboard love' theories

- Both behaviourist and psychoanalytic accounts of attachment as 'cupboard love' were challenged by Harlow's studies involving rhesus monkeys (e.g. Harlow, 1959; Harlow & Zimmerman, 1959). In the course of studying learning, Harlow separated newborn monkeys from their mothers and raised them in individual cages. Each cage contained a 'baby blanket', to which the monkey became intensely attached, showing great distress when it was removed for any reason. This apparent attachment to its blanket, and the display of behaviour comparable to that of an infant monkey actually separated from its mother, seemed to contradict the view that attachment comes from an association with nourishment.

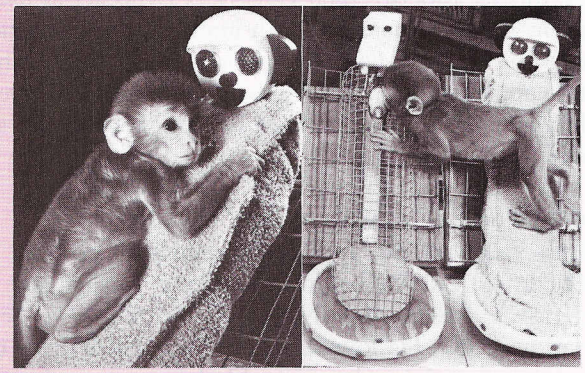
KEY STUDY 32.1 A cuddle's worth more than food to a rhesus monkey (Harlow, 1959; Harlow & Zimmerman, 1959)

- To determine whether food or the close comfort of a blanket were more important, Harlow placed infant rhesus monkeys in cages with two 'surrogate (substitute) mothers'.
- In one experiment, one of the surrogate mothers was made from wire and had a baby bottle attached to 'her'. The other was made from soft and cuddly terry cloth, but didn't have a bottle attached.
- The infants spent most of their time clinging to the cloth mother, even though 'she' provided no nourishment. Harlow concluded from this that monkeys have an unlearned need for *contact comfort*, which is as basic as the need for food.

ASK YOURSELF...

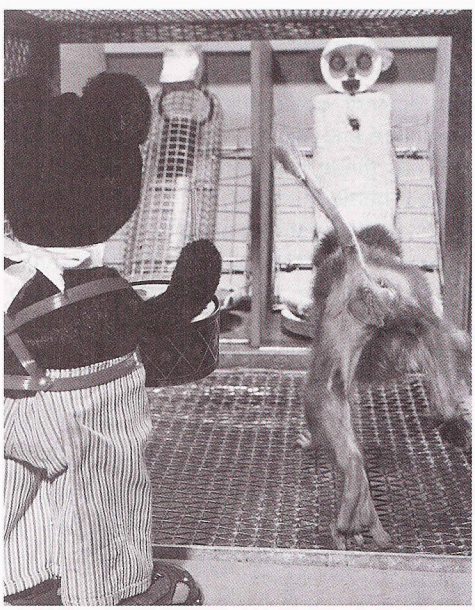
- If the cloth mother had been fitted with a bottle but the wire mother hadn't, would the baby's preference for the cloth mother still have indicated an unlearned need for contact comfort?

By fitting only the wire mother with a bottle, Harlow was trying to separate the two variables (the need for food and the need for something soft and cuddly), so as to assess their relative importance. If the cloth mother had been fitted with a bottle, it would have been impossible to interpret the infants' clinging behaviour: was it due to the food or to her being soft and cuddly?



Rhesus monkey displaying contact comfort

The cloth surrogate also served as a 'secure base' from which the infant could explore its environment. When novel stimuli were placed in the cage, the infant would gradually move away from the 'mother' for initial exploration, often returning to 'her' before exploring further. When 'fear stimuli' (such as an oversized wooden insect or a toy bear loudly beating a drum) were placed in the cage, the infant would cling to the cloth mother for security before exploring the stimuli. But when it was alone or with the wire surrogate, it would either 'freeze' and cower in fear, or run aimlessly around the cage.



Infant monkeys frightened by a novel stimulus (in this case a toy teddy bear banging a drum) retreat to the terry cloth-covered 'mother' rather than to the wire 'mother'

◎ Later research showed that when the cloth 'mother' had other qualities, such as rocking, and providing warmth and food, the attachment was even stronger (Harlow & Suomi, 1970). This is similar to what happens when human infants have contact with parents who rock, cuddle, and feed them.

Although attachment clearly doesn't depend on feeding alone, the rhesus monkeys reared exclusively with their cloth 'mothers' failed to develop normally. They became extremely aggressive adults, rarely interacted with other monkeys, made inappropriate sexual responses, and were difficult (if not impossible) to breed. So, in monkeys at least, normal development seems to depend on factors other than having something soft and cuddly to provide comfort. Harlow and Suomi's research indicates that one of these is *interaction with other members of the species* during the first six months of life.

◎ Research on attachment in humans also casts doubt on 'cupboard love' theories.

KEY STUDY 32.2 Feeding isn't everything for Scottish infants (Schaffer & Emerson, 1964)

- Sixty infants were followed up at four-weekly intervals throughout their first year, and then again at 18 months.
- Mothers reported on their infants' behaviour in seven everyday situations involving separations, such as being left alone in a room, with a babysitter, and put to bed at night. For each situation, information was obtained regarding whether the infant protested or not, how much and how regularly it protested, and whose departure elicited it.
- Infants were clearly attached to people who didn't perform caretaking activities (notably the father). Also, in 39 per cent of cases, the person who usually fed, bathed and changed the infant (typically the mother) wasn't the infant's primary attachment figure.

Schaffer and Emerson concluded that the two features of a person's behaviour which best predicted whether s/he would become an attachment figure for the infant are:

1. *responsiveness* to the infant's behaviour
2. the *total amount of stimulation* s/he provided (such as talking, touching, and playing).

For Schaffer (1971), 'cupboard love' theories of attachment put things the wrong way round. Instead of infants being passive recipients of nutrition (they 'live to eat'), he prefers to see them as *active seekers of stimulation* (they 'eat to live').

Ethological theories

The term 'attachment' was actually introduced to psychology by *ethologists*. Lorenz (1935) showed that some non-humans form strong bonds with the first moving objects they encounter (usually, but not always, the mother). In *precocial* species (in which the new-born is able to move around and possesses well-developed

sense organs), the mobile young animal needs to learn rapidly to recognise its caregivers and to stay close to them. Lorenz called this *imprinting*. Since imprinting occurs simply through perceiving the caregiver without any feeding taking place, it too makes a 'cupboard love' account of attachment seem less valid, at least in goslings.

Box 32.1 Some characteristics of imprinting

- The response of following a moving individual/object indicates that a bond has been formed between the infant and the individual/object on which it's been imprinted.
- Ethologists see imprinting as an example of a *fixed-action pattern* (FAP), which occurs in the presence of a species-specific releasing stimulus (or *sign stimulus*).
- Lorenz saw imprinting as unique, because (a) it occurs only during a brief *critical period* of life, and (b) once it has occurred, is *irreversible*. This is supported by the finding that when animals imprinted on members of other species reach sexual maturity, they may show a sexual preference for members of that species.

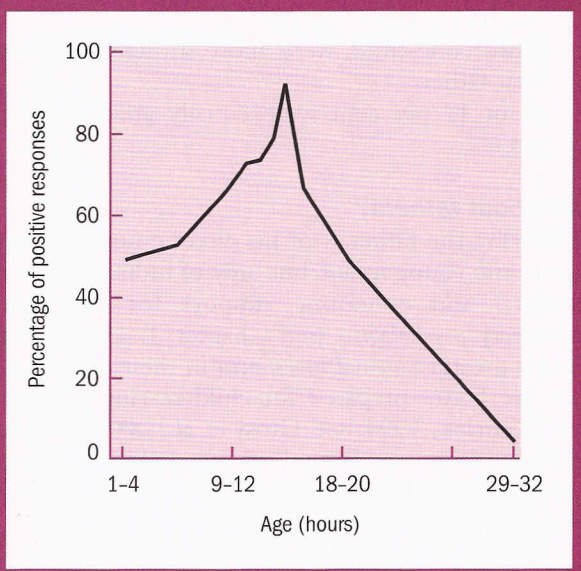
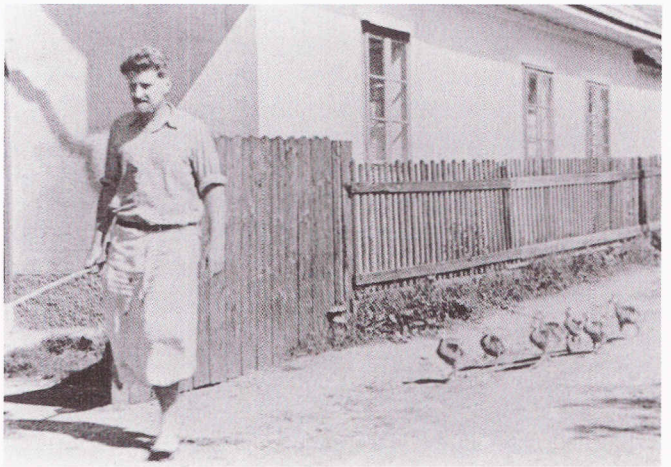


Figure 32.1 The graph represents the relationship between imprinting and the age (hours after hatching) at which a duckling was exposed to a moving model of a male duck

A *critical period* is a restricted time period during which certain events must take place if normal development is to occur (Bornstein, 1989). Lorenz saw imprinting as being genetically 'switched on', and then 'switched off' again at the end of the critical period. However, studies have shown that the critical period can be extended by changing the environment in certain ways. This has led some researchers (e.g. Sluckin, 1965) to propose instead the existence of a *sensitive period:* learning is *most likely* to happen at this time, and will occur most easily, but it may still occur at *other times.* Also, imprinting is reversible (at least in the laboratory: see Gross *et al.*, 2000).



Lorenz being followed by goslings which had imprinted on him soon after hatching

ASK YOURSELF...

- How relevant are Harlow's and Lorenz's findings with rhesus monkeys and goslings respectively to understanding human attachments?

Most psychologists would agree that the only way to be sure about a particular species is to study that species. To generalise the findings from rhesus monkeys and goslings to human infants is dangerous (although less so in the case of rhesus monkeys). However, Harlow's and Lorenz's findings can suggest how attachments might be formed in humans. Indeed, Bowlby was greatly influenced by ethological theory, especially by Lorenz's concept of imprinting.

Bowlby's theory

This represents the most comprehensive theory of human attachment formation. Bowlby (1969, 1973) argued that because new-born human infants are entirely helpless, they're *genetically programmed* to behave towards their mothers in ways that ensure their survival.

Box 32.2 Species-specific behaviours used by infants to shape and control their caregivers' behaviour

Sucking: While sucking is important for nourishment, not all sucking is nutritive. *Non-nutritive sucking*, also seen in non-humans, seems to be an innate tendency which inhibits a new-born's distress. In western societies, babies are often given 'dummies' (or 'pacifiers') to calm them when they're upset.

Cuddling: Human infants adjust their postures to mould themselves to the contours of the parent's body. The reflexive response that encourages front-to-front contact with the mother plays an important part in reinforcing the caregiver's behaviour (see Box 32.1).

Looking: When parents don't respond to an infant's eye contact, the infant usually shows signs of distress. An infant's looking behaviour, therefore, acts as an invitation to its mother to respond. If she fails to do so, the infant becomes upset and avoids further visual contact. By contrast, mutual gazing is rewarding for an infant.

Smiling: This seems to be an innate behaviour, since babies can produce smiles shortly after birth. Although the first 'social smile' doesn't usually occur before six weeks (see page 542), adults view the smiling infant as a 'real person', which they find very rewarding.

Crying: Young infants usually cry only when hungry, cold, or in pain, and crying is most effectively ended by picking up and cuddling them. Caregivers who respond quickly during the first three months tend to have babies that cry *less* during the last four months of their first year than infants with unresponsive caregivers (Bell & Ainsworth, 1972).

The mother also inherits a genetic blueprint which programmes her to respond to the baby. There's a critical period during which the *synchrony of action* between mother and infant produces an attachment. In Bowlby's (1951) view, mothering is useless for all children if delayed until after two-and-a-half to three years, and for most children if delayed until after 12 months.

Strictly speaking, it's only the child who's *attached* to the mother, while she is *bonded* to her baby. The child's attachment to its mother helps to regulate how far away from the mother the child will move, and the amount of fear it will show towards strangers. Generally, attachment behaviours (see Box 32.2) are more evident when the child is distressed, unwell, afraid, or in unfamiliar surroundings.

Bowlby believed that infants display a strong innate tendency to become attached to one particular adult female (not necessarily the natural mother), a tendency he called *monotropy*. This attachment to the mother-figure is *qualitatively* different (different in kind) from any later attachments. For Bowlby (1951):

> Mother love in infancy is as important for mental health as are vitamins and proteins for physical health.

ASK YOURSELF...

- Do you agree with Bowlby that the infant's relationship with its mother is unique, or are men just as capable as women of providing adequate parenting and becoming attachment figures for their young children?

An evaluation of Bowlby's theory

- Bowlby's views on monotropy have been criticised. For example, infants and young children display a whole range of attachment behaviours towards a variety of attachment figures other than their mothers. In other words, the mother isn't special in the way the infant shows its attachment to her (Rutter, 1981).
- Although Bowlby didn't deny that children form multiple attachments, he saw attachment to the mother as being unique: it's the first to develop and is the strongest of all. However, Schaffer & Emerson's (1964) study (see Key Study 32.2) showed that multiple attachments seem to be the rule rather than the exception:
  - at about seven months, 29 per cent of infants had already formed several attachments simultaneously (10 per cent had formed five or more)
  - at 10 months, 59 per cent had developed more than one attachment
  - by 18 months, 87 per cent had done so (one-third had formed five or more).

  Although there was usually one particularly strong attachment, most infants showed multiple attachments of varying intensity:
  - only half of the 18-month-olds were most strongly attached to their mothers
  - almost one-third were most strongly attached to their fathers
  - about 17 per cent were equally attached to both parents.

What about fathers?

For Bowlby, the father is of no direct emotional significance to the young infant, but only of indirect value as an emotional and economic support for the mother. *Evolutionary psychologists* (see Chapter 2) see mothers as having a greater *parental investment* in their offspring, and hence are better prepared for child-rearing and attachment (Kenrick, 1994: see Gross *et al.*, 2000). However, Bowlby's views on fathers as attachment figures are disputed by findings such as those of Schaffer and Emerson.

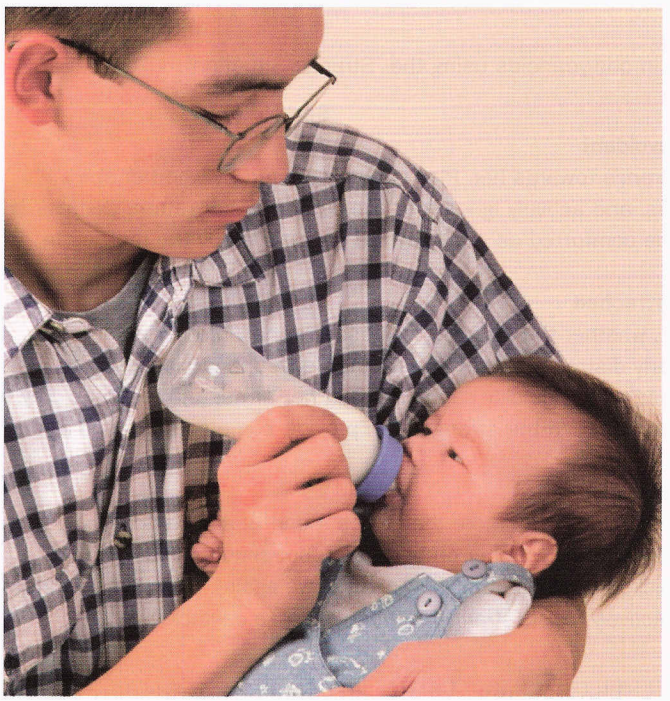
CRITICAL DISCUSSION 32.1 How good are fathers at being mothers?

- Framing the question this way, of course, rests on the implicit assumption that women are 'natural' parents. This view of women is reflected in Bowlby's theory of monotropy and the complementary responsiveness of mothers to their babies (the 'maternal instinct').
- Based on this view of women-as-mothers, any departure from the traditional division of labour in child care has been greeted with suspicion: men inevitably will provide inferior parenting (Schaffer, 2004).
- Although *men as principal parents* is still a minority phenomenon, it's by no means as unusual as it used to be. Fathers' participation in child-rearing has certainly become much more common and an increasing number of children now live in father-headed families.

- There's considerable cultural variation in the extent of fathers' involvement in child care. This suggests that whatever sex differences exist in this respect are a matter of *social convention* and not an 'immutably fixed part of being male or female' (Schaffer, 2004) or *biology*.
- Although the evidence is sparse, there's no indication that the development of children brought up by a man differs in any way from that of others. Direct observation of men in their fathering role has shown them to be capable of as much warmth and sensitivity as women (Schaffer, 2004).
- According to Parke (1981):

  Both mother and father are important attachment objects for their infants, but the circumstances that lead to selecting mum or dad may differ.

Rather than being poor substitutes for mothers, fathers make their own unique contribution to the care and development of infants and young children (at least in two-parent families). Children's developmental outcome is affected not by the parents' gender, but by the kind of relationship that exists within each individual parent–child couple (Parke, 2002).



Does the baby really mind that the person who feeds it isn't female?

INDIVIDUAL AND CULTURAL VARIATIONS IN ATTACHMENT

A pioneering study of individual differences in children's attachment to their mothers was conducted by Ainsworth (1967) in Uganda.

CROSS-CULTURAL STUDY 32.1

Ainsworth's (1967) Uganda study

- Ainsworth studied 28 unweaned babies from several villages near Kampala, Uganda. At the beginning of the study, the babies ranged from 15 weeks to two years of age.
- They were observed every two weeks, for two hours at a time, over a nine-month period. Visits took place in the family living-room, where Ugandan women generally entertain in the afternoon. The mothers were interviewed (with the help of an interpreter), and naturalistic observations were made of the occurrence of specific attachment-related behaviours.
- Ainsworth was particularly interested in individual differences between mother–child pairs regarding the quality of their attachment relationships. To tap into these differences, she devised various rating scales. The most important of these in terms of her future research was a scale for evaluating maternal sensitivity to the baby's signals.
- Individual differences among babies were assessed by classifying them into three groups: securely attached, insecurely attached, and the not-yet-attached. These infant classifications were significantly correlated with ratings of the mothers' sensitivity (based purely on interview data) and the amount of holding by the mother (based on observation).

Ainsworth replicated her Ugandan study in Baltimore, USA (Ainsworth *et al.*, 1971, 1978). Van Ijzendoorn & Schuengel (1999) describe the Baltimore study as the most important study in the history of attachment research. Like the earlier study, both interviews and naturalistic observation were used, but the latter now played a much greater role.

Also like the Uganda study, the Baltimore study was *longitudinal:* 26 mother–infant pairs were visited at home every three to four weeks, each visit lasting three to four hours, for the first year of the baby's life. In order to make sense of the enormous amount of data collected for each pair (72 hours' worth), there needed to be an *external criterion measure* (some standard against which to compare the observations). The criterion chosen was the *Strange Situation* (see Figure 32.2, page 549, and Table 32.1 page 548).

The Strange Situation (SS) had been devised earlier by Ainsworth & Wittig (1969). They wanted to study how the baby's tendencies towards attachment and exploration interact under conditions of low and high stress. They believed that the balance between these two systems could be observed more easily in an unfamiliar environment. In the Baltimore study, the SS was modified to enable infant and maternal behaviour patterns to be classified.

Group data confirmed that babies explored the playroom and toys more vigorously in the mothers' presence

Table 32.1 The eight episodes of the 'Strange Situation'

Episode	Persons present	Duration	Brief description
1	Mother, baby, observer	30 seconds	Observer introduces mother and baby to experimental room, then leaves
2	Mother, baby	3 minutes	Mother is non-participant while baby explores; if necessary, play is stimulated after two minutes
3	Stranger, mother, baby	3 minutes	Stranger enters. First minute: stranger silent. Second minute: stranger converses with mother. Third minute: stranger approaches baby. After three minutes, mother leaves unobtrusively
4	Stranger, baby	3 minutes or less*	First separation episode. Stranger's behaviour is geared to the baby's
5	Mother, baby	3 minutes or more**	First reunion episode. Stranger leaves. Mother greets and/or comforts baby, then tries to settle baby again in play. Mother then leaves, saying 'bye-bye'
6	Baby	3 minutes or less*	Second separation episode
7	Stranger, baby	3 minutes or less*	Continuation of second separation. Stranger enters and gears her behaviour to baby's
8	Mother, baby	3 minutes	Second reunion episode. Mother enters, greets baby, then picks up baby. Meanwhile, stranger leaves unobtrusively

*Episode is ended early if baby is unduly distressed.

** Episode is prolonged if more time is required for baby to become reinvolved in play.

(Based on Ainsworth *et al.*, 1978; Krebs & Blackman, 1988)

Table 32.2 Behaviour associated with three types of attachment in one-year-olds using the 'Strange Situation'.

Category	Name	Sample (%)
Type A	**Anxious–avoidant**	**15**

Typical behaviour: Baby largely ignores mother, because of *indifference* towards her. Play is little affected by whether she's present or absent. No or few signs of distress when mother leaves, and actively ignores or avoids her on her return. *Distress is caused by being alone*, rather than being left by the mother. Can be comforted as easily by the stranger as by the mother. In fact, *both adults are treated in a very similar way*.

Type B	**Securely attached**	**70**

Typical behaviour: Baby plays happily while the mother is present, whether the stranger is present or not. Mother is largely 'ignored', because she can be trusted to be there if needed. Clearly distressed when the mother leaves, and play is considerably reduced. Seeks immediate contact with mother on her return, quickly calms down in her arms, and resumes play. The *distress is caused by the mother's absence*, not by being alone. Although the stranger can provide some comfort, *she and the mother are treated very differently*.

Type C	**Anxious–resistant**	**15**

Typical behaviour: Baby is fussy and wary while the mother is present. Cries a lot more than types A and B, and *has difficulty using mother as a safe base*. Very distressed when she leaves, seeks contact with her on her return, but simultaneously shows anger and resists contact (may approach her and reach out to be picked up, then struggles to get down again). This demonstrates the baby's *ambivalence* towards her. Doesn't return to play readily. *Actively resists stranger's efforts to make contact*.

than after the stranger entered or while the mother was absent. However, Ainsworth was particularly fascinated by the unexpected variety of infants' reactions to the mothers' return (*reunion behaviours:* see Table 32.2).

In the SS technique, although every aspect of the participants' reactions is observed and videotaped, it's the child's response to the mother's return that's given the most attention. This provides a clearer picture of the state of attachment than even the response to separation itself (Marrone, 1998).

The dynamics of the attachment relationship can be seen in terms of a balance between (a) exploratory behaviour directed towards the environment, and (b) attachment behaviour directed towards the caregiver. Looked at in this light, securely attached babies have got the balance right (Meins, 2003). But in both patterns of insecure attachment, the balance is tipped to one or other extreme: the anxious-avoidant baby shows high levels of environment-directed behaviour to the detriment of attachment behaviour, while the anxious-resistant baby is

preoccupied with the caregiver to the detriment of exploration and play.

The role of maternal sensitivity

The crucial feature determining the quality of attachment is the mother's *sensitivity*. The sensitive mother sees things from her baby's perspective, correctly interprets its signals, responds to its needs, and is accepting, cooperative, and accessible. By contrast, the insensitive mother interacts almost exclusively in terms of her own wishes, moods, and activities. According to Ainsworth *et al.*, sensitive mothers tend to have babies who are *securely attached,* whereas insensitive mothers have *insecurely attached* babies (either *anxious–avoidant/detached* or *anxious–resistant/ambivalent*).

Both the Uganda and Baltimore studies provided support for the idea that parental sensitivity is the key factor in attachment development. However, they both used rather small samples and so could only be considered promising explorations into the roots of early differences in attachment. But during the past 20 years or so, several studies with larger samples have tested, and supported, the original claim that parental sensitivity actually *causes* attachment security (van Ijzendoorn & Schuengel, 1999).

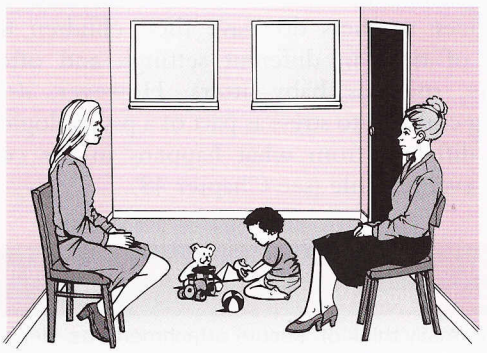


Figure 32.2 One of the eight episodes in the 'Strange Situation'

However, as important as sensitivity is, it isn't an *exclusive* condition for attachment security – other parenting qualities also play a part (e.g. DeWolff & van Ijzendoorn, 1997). Conversely, even abusive parents don't necessarily produce deviant forms of attachment. According to Schaffer (2004), although maltreated children are clearly at risk:

- they usually show some signs of attachment to their abusing parents, although this may be confused and disorganised (see below); the attachment system seems to be so powerful that even in the absence of consistent love and emotional warmth, children persist in trying to form attachments
- there are always some children (although a small minority – about 15 per cent) who form secure attachments; they enjoy good relationships with peers and others, and by no means all abused children become abusing adults.

Evaluation of the Strange Situation

- According to Goldberg (2000) the SS:

> ... represents a unique combination of experimental and clinical methods, as the procedure itself is well standardised but allows controlled opportunities for natural interactions ...

The observer focuses on the infant, with the mother's caregiving behaviour regarded primarily as the *context* for the infant's behaviour. The advantage of this is that while the mother may try to please the experimenter and show herself to be a 'good mother', infant behaviour is free of such biases and is more transparent.

- When the family's living conditions don't change, the children's attachment patterns also remain fairly constant, both in the short term (six months: Waters, 1978) and the long term (up to five years: Main *et al.*, 1985). This is commonly interpreted as reflecting a *fixed characteristic of the child,* such as temperament (see page 542).
- But Vaughn *et al.* (1980) showed that attachment type may change depending on variations in the family's circumstances. Children of single parents living in poverty were studied at 12 and 18 months. Significantly, 38 per cent were classified differently on the two occasions, reflecting changes in the families' circumstances, particularly changes in accommodation and the mothers' degree of stress. This suggests that attachment types aren't necessarily permanent characteristics. In general, the longer the gap between assessments, the more likely it is that children will be found to have changed classification status (Schaffer, 2004).
- Patterns of attachment to mothers and fathers are *independent,* so the same child might be securely attached to its mother, but insecurely attached to its father (Main & Weston, 1981). This shows that attachment patterns derived from the SS reflect qualities of distinct relationships, rather than characteristics of the child. If temperament, for example, were the main cause of attachment classification, the same child should develop the same kind of attachment pattern to both parents (van Ijzendoorn & De Wolff, 1997);
- According to Main (1991; Main & Hesse, 1990), many babies don't fit neatly into Ainsworth *et al*'s three attachment types. She identifies a fourth type, namely *insecure–disorganised/disoriented* (type D). This describes a baby that acts as if afraid of the attachment figure (as well as the environment). Fear usually increases attachment behaviour, which includes seeking closer proximity to the attachment figure. But since the

attachment figure is itself a source of fear, the infant faces a conflict between seeking and avoiding closeness to the attachment figure. Type D has been linked to infant maltreatment or hostile caregiving, maternal history of loss through separation, divorce or death (Lyons-Ruth *et al.*, 1991), and maternal depression (Radke-Yarrow *et al.*, 1995).

CROSS-CULTURAL STUDY 32.2

Cross-cultural studies

Cross-cultural studies have also revealed important differences, both within and between cultures. Van Ijzendoorn & Kroonenberg (1988) carried out a major review of 32 worldwide studies involving eight countries and over 2000 infants, and reached three main conclusions.

1. There are marked differences within cultures in the distribution of types A, B and C. For example, in one of two Japanese studies, there was a complete absence of type A but a high proportion of type C, while the other study was much more consistent with Ainsworth *et al.*'s findings.
2. The overall worldwide pattern, and that for the USA, was similar to the Ainsworth *et al.* 'standard' pattern. But within the USA, there was considerable variation between samples.
3. There seems to be a pattern of cross-cultural differences: while type B is the most common, type A is relatively more common in western European countries, and type C is relatively more common in Israel and Japan.

How can we account for these differences? Regarding the third conclusion, Japanese children are rarely separated from their mothers, so that the departure of the mother is the most upsetting episode in the SS. Japanese mothers commonly sleep with their infants, and are in constant bodily contact with them during the day, carrying them around in slings. As Meins (2003) says:



Constant bodily contact with the mother would make the Strange Situation an extremely stressful way of trying to assess this baby's attachment to her

... in traditional Japanese culture, it would appear that the strange situation is not an appropriate and accurate measure of attachment security, since the procedure is too far removed from the infant's everyday experiences of caregiving ...

For children raised on Israeli kibbutzim (small, close-knit groups), the entrance of a stranger was the main source of distress. Valid interpretations of the SS in cross-cultural settings require intimate knowledge of child-rearing customs and goals (Goldberg, 2000).

While the SS is the most widely used method for assessing infant attachment to a caregiver (Melhuish, 1993), Lamb *et al.* (1985) have criticised it for:

- being highly artificial
- being extremely limited in terms of the amount of information that's actually gathered
- failing to take account of the mother's behaviour.

ASK YOURSELF...

- How could the SS be criticised on ethical grounds?

As we noted earlier, the SS is designed to see how young children react to stress, with the stranger becoming more intrusive over the course of the eight episodes. According to Marrone (1998), although the SS has been criticised for being stressful, it's modelled on common, everyday experiences: mothers do leave their children for brief periods of time in different settings, and often with strangers, such as baby-sitters. However, *deliberately* exposing children to stress as part of a psychological study is very different from what happens in the course of normal, everyday life (see Chapter 48).

CRITICAL DISCUSSION 32.2 Is being securely attached necessarily a good thing?

- We normally think of 'secure attachment' as 'desirable (it's *implicit* in the concept of 'secure').
- But from an *evolutionary* perspective, the variability in types of human attachment pattern prepares the young of the species to adapt to parents' pattern of *investment* in their offspring. Infants increase their chances of survival if they can adapt to the particular caregiving conditions they encounter (Miller, 2002).
- If parents are heavily invested, and so are sensitive and responsive, then environmental risks to the children decrease, and they can explore more freely from their safe base.
- But if parents are unwilling/unable to invest heavily (due to environmental pressures, such as scarce food), then resistant or avoidant attachment styles may be *more adaptive*. In *resistant* attachment, clinging to the caregiver may guarantee whatever meagre resources are available, while in *avoidant* attachment, a more independent child can try to obtain resources from other adults.

- According to Thompson (1998):

  Attachment patterns that are adaptive for certain rearing conditions may be maladaptive for others, and patterns that are initially adaptive may not remain so if conditions change appreciably.

  This relates to cultural differences, and changes in the circumstances of individual families, respectively (see text above).

DEPRIVATION AND PRIVATION

Bowlby's maternal-deprivation hypothesis (MDH)

As noted earlier, Bowlby argued for the existence of a critical period in attachment formation. This, along with his theory of monotropy (see page 546), led him to claim that the mother–infant attachment couldn't be broken in the first few years of life without serious and permanent damage to social, emotional and intellectual development. For Bowlby (1951):

An infant and young child should experience a warm, intimate and continuous relationship with his mother (or permanent mother figure) in which both find satisfaction and enjoyment.

Bowlby's *maternal-deprivation hypothesis* (MDH) was based largely on studies conducted in the 1930s and 1940s of children brought up in residential nurseries and other large institutions (such as orphanages).

KEY STUDY 32.3 Some early research findings on the effects of institutionalisation

Goldfarb (1943): 15 children raised in institutions from about six months until three-and-a-half years of age were matched with 15 children who'd gone straight from their mothers to foster homes. The institutionalised children lived in almost complete social isolation during their first year. The matching was based on genetic factors and natural mothers' education and occupational status.

At age three, the institutionalised group was behind the fostered group on measures of abstract thinking, social maturity, rule-following, and sociability. Between 10 and 14, the institutionalised group continued to perform more poorly on the various tests, and their average IQs (intelligence quotients) were 72 and 95 respectively.

ASK YOURSELF...

- Note that the children weren't assigned randomly to the two 'conditions' (as would happen in a true experiment). So, how was the decision made?
- What characteristics of the children might have determined whether they were fostered or kept in the institution, and how might this have accounted for the results?

Those who appeared to be brighter or more easygoing, more sociable and healthy, were more likely to have been fostered. In this case, the differences in development of the two groups might have been due to these initial characteristics. However, Goldfarb concluded that all the institutionalised children's poorer abilities were due to the time spent in the institutions.

Spitz (1945, 1946); Spitz & Wolf (1946): Spitz found that in some very poor South American orphanages, overworked and untrained staff rarely talked to the infants, hardly ever picked them up even for feeding, gave them no affection, and provided no toys. The orphans displayed *anaclitic depression* (a reaction to the loss of a love object). This involves symptoms such as apprehension, sadness, weepiness, withdrawal, loss of appetite, refusal to eat, loss of weight, inability to sleep, and developmental retardation. It's similar to *hospitalism*.

After three months of unbroken deprivation, recovery was rarely, if ever, complete. In their study of 91 orphanage infants in the USA and Canada, Spitz and Wolf found that over one-third died before their first birthdays, despite good nutrition and medical care.

Interpreting the findings from studies of institutions

Bowlby, Goldfarb, Spitz and Wolf explained the harmful effects of growing up in an institution in terms of what Bowlby called maternal deprivation. In doing so, they failed to:

- recognise that the understimulating nature of the institutional environment, as well as (or instead of) the absence of maternal care, could be responsible for the effects they observed
- disentangle the different types of deprivation and the different kinds of retardation produced (Rutter, 1981)
- distinguish between the effects of deprivation and privation. Strictly, *deprivation* ('de-privation') refers to the loss, through separation, of the maternal attachment figure (which assumes that an attachment has already developed); *privation* refers to the absence of an attachment figure (there's been no opportunity to form an attachment in the first place: Rutter, 1981).

Poor, unstimulating environments are generally associated with learning difficulties and retarded language development. Language development is crucial for overall intellectual development. Hence, a crucial variable in intellectual development is the amount of *intellectual stimulation* a child receives, *not* the amount of mothering.

The studies described in Key Study 32.3 (on which Bowlby originally based his maternal deprivation hypothesis) are most accurately thought of as demonstrating the effects of *privation*. However, Bowlby's own theory and research were mainly concerned with *deprivation*. By only using the one term (deprivation), he

confused two very different types of early experience, which have very different types of effect (both short- and long-term).

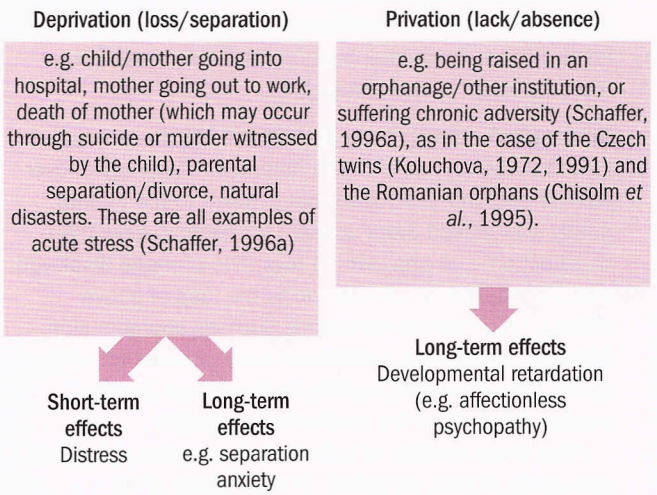


Figure 32.3 Examples of the difference between deprivation and privation, including their effects

Deprivation (separation or loss)

Short-term deprivation and its effects

One example of short-term deprivation (days or weeks, rather than months or years) is that of a child going into a nursery while its mother goes into hospital. Another is that of the child itself going into hospital. Bowlby showed that when young children go into hospital, they display *distress,* which typically involves three components or stages.

Box 32.3 The components or stages of distress

Protest: The initial, immediate reaction takes the form of crying, screaming, kicking, and generally struggling to escape, or clinging to the mother to prevent her from leaving. This is an outward and direct expression of the child's anger, fear, bitterness, and bewilderment.

Despair: The struggling and protest eventually give way to calmer behaviour. The child may appear apathetic, but internally still feels all the anger and fear previously displayed. It keeps such feelings 'locked up' and wants nothing to do with other people. The child may no longer anticipate the mother's return, and barely reacts to others' offers of comfort, preferring to comfort itself by rocking, thumb-sucking, and so on.

Detachment: If the separation continues, the child begins to respond to people again, but tends to treat everyone alike and rather superficially. However, if reunited with the mother at this stage, the child may well have to 'relearn' its relationship with her and may even 'reject' her (as she 'rejected' her child).

Factors influencing distress

ASK YOURSELF...

- Distress (especially protest and despair) can be thought of as an extreme display of attachment behaviour. Looked at this way, what factors do you think are likely to make separation most distressing for a child?

Evidence suggests that not all children go through the stages of distress, and that they differ in how much distress they experience. Separation is likely to be most distressing in the following situations:

- between the ages of 7/8 months (when attachments are just beginning to develop: see page 542) and three years, with a peak at 12–18 months (Maccoby, 1980). This is related to the child's inability to retain a mental image of the absent mother, and its limited understanding of language. For example, because young children cannot understand phrases like 'in a few days' time' or 'next week', it's difficult to explain that the separation is only temporary. They might believe they've been abandoned totally and that they're in some way to blame for what's happened ('Mummy's going away because I've been naughty')
- for boys (although there are also wide differences within each gender)
- if there have been any behaviour problems, such as aggression, that existed before the separation. Such problems are likely to be accentuated if separation occurs



John (17 months) experienced extreme distress while spending nine days in a residential nursery when his mother was in hospital having a second baby. According to Bowlby, he was grieving for the absent mother. Robertson & Robertson (1969) (who made a series of films called *Young Children in Brief Separation*) found that the extreme distress was caused by a combination of factors: loss of the mother, strange environment and routines, multiple caretakers and lack of a mother substitute

- if the mother and child have an extremely close and protective relationship, in which they're rarely apart and the child is unused to meeting new people. Children appear to cope best if their relationship with their mother is stable and relaxed, but not too close, and if they have other attachment figures (such as their father) who can provide love and care. Many institutions used to be run in a way which made the development of substitute attachments very difficult. High staff turnover, a large number of children competing for the attention of a small number of carers, and the sometimes deliberate policies preventing special relationships, could all have worked against the provision of high-quality substitute attachments (Tizard & Rees, 1974).

One *long-term* effect of short-term separation is *separation anxiety.* This is also associated with long-term deprivation and is discussed below.

Long-term deprivation and its effects

Long-term deprivation includes the permanent separation resulting from *parental death,* and the increasingly common separation caused by *divorce.* Perhaps the most common effect of long-term deprivation is what Bowlby called *separation anxiety* (the fear that separation will occur again in the future).

Separation anxiety

Separation anxiety may manifest itself in:

- increased aggressive behaviour and greater demands towards the mother
- clinging behaviour – the child is unable to let the mother out of its sight. This may generalise to other relationships, so that a man who experienced 'bad' childhood separations may be very dependent on, and demanding of, his wife
- detachment – the child becomes apparently self-sufficient, because it cannot afford to be let down again
- some vacillation between clinging and detachment
- psychosomatic (*psychophysiological*) reactions.

The effects of divorce

Divorce isn't a *specific* event, but a long-drawn-out *process* that may impinge on children over a period of years. The process begins with parental conflict, and extends well beyond the departure of one spouse and legal separation (Schaffer, 2004). Children can react very differently at different times, so we mustn't generalise from findings obtained at one particular point in this process.

However, nearly all children (especially boys), regardless of their age, are adversely affected by parental divorce, at least in the short term (Schaffer, 1996a). Yet despite the stresses involved, most children are resilient enough to adapt to their parents' divorce eventually (Hetherington & Stanley-Hagan, 1999). The nature, severity and duration of the effects vary greatly between children. These are influenced by many factors, including:

- continuity of contact with the non-custodial parent
- the financial status/lifestyle of the single-parent family
- whether the custodial parent remarries, and the nature of the resulting step-family.

Box 32.4 Some of the major effects on children of parental divorce

Compared with children of similar social backgrounds whose parents remain married, those whose parents divorce show small but consistent differences throughout childhood. They also have different life courses as they move into adulthood. The differences include:

- lower levels of academic achievement and self-esteem
- a higher incidence (2–3 times) of antisocial and delinquent behaviour, and other problems of psychological adjustment during childhood and adolescence; but only 20–30 per cent of those with maladjustment show any severe or lasting problems
- earlier social maturity, with certain transitions to adulthood (such as leaving home, beginning sexual relationships, cohabiting or getting married and becoming pregnant) typically occurring younger
- a tendency in young adulthood to more frequent changes of job, lower socio-economic status, a greater frequency of depression and lower scores on measures of psychological well-being; they're also more likely themselves to divorce
- more distant relationships in adulthood with parents and other relatives.

(Based on Hetherington & Stanley-Hagan, 1999; Richards, 1995; Schaffer, 2004)

Overall, the risk factor is small, and only a minority of children are affected. According to Schaffer (2004):

... The fear that children are scarred for life by parental divorce is thus not justified as a generalisation.

The findings reported in Critical Discussion 32.3 are *correlational,* so we cannot be sure that it's divorce (or divorce alone) that's responsible for the differences that have been reported.

CRITICAL DISCUSSION 32.3 What is it about divorce that can be harmful?

- According to Schaffer (2004), there are three possible explanations: (a) absence of one of the parents (usually the father); (b) the socio-economic consequences of

living in a single-parent household; and (c) conflict between the parents – before (and sometimes after) the divorce.

- Despite indications that all three play a part in the emergence of psychological difficulties (Amato & Keith, 1991), *conflict* is by far the most potent influence (Schaffer, 1996a).
- Children whose father dies are considerably less likely to be disturbed long term than those who lose their father through divorce. So, it's *not* parental absence as such that's important, rather the *circumstances* surrounding the absence.
- Several follow-up studies have shown that children whose parents divorce are already showing signs of psychological upset as early as 8–12 years *before* the divorce (e.g. Amato & Booth, 1996). This is likely to be the result of the deteriorating nature of the marital relationship and the atmosphere of conflict.
- Conversely, conflict between parents who live together is associated with low self-esteem in children (Amato, 1993). In turn, low self-esteem may lead to other problems, including lower school achievement and difficulties in forming relationships.
- Conflict can have a *direct* influence on the child through witnessing the parents' loss of emotional control. This can be very frightening for young children, at a time when they need parents to provide a model for emotional self-regulation. More *indirectly*, the greater the difficulties between the parents, the greater the difficulties each parent has in caring for the child (Schaffer, 2004).
- Conflict often *increases* in the first few years after divorce, over financial settlements, access arrangements, and co-parenting, parents' rights and responsibilities. Under these conditions, it's better for children to remain in an unhappy two-parent household than to suffer the effects of divorce. If there's a shift to a more harmonious household, then a divorce is advantageous to both boys and girls. But even in low-conflict divorced families, boys (but not girls) are worse off than those in low-conflict non-divorced families (Hetherington & Stanley-Hagan, 1999).



Non-maternal shared care is both historically and culturally normative

whose mothers are employed. For example, just over 52 per cent of women in the UK with children under five worked in 2003 (Hinsliff, 2004). According to Scarr (1998), non-maternal shared care is normative, both historically and culturally (and so is universal).

The demand for child care is driven entirely by the economic need for women in the labour force. In 1997, women comprised 49.5 per cent of those in paid employment in the UK, and in 2000 they outnumbered men (although with a far higher percentage in part-time work: Kremer, 1998).

Despite these changing patterns of female employment, the belief that women are born and reared to be, first and foremost, mothers (the *motherhood mystique/mandate*) remains an influence on our attitudes about working mothers (Kremer, 1998).

ASK YOURSELF...

- What would Bowlby's theory predict about the effects of working mothers on the development of their child's attachment?

The effects of daycare

This is regarded by some as another form of long-term deprivation. According to Scarr (1998), daycare includes all varieties of non-maternal care of children who reside with their parent(s) or close relatives, and so excludes foster care and institutional (residential) care.

A deep-seated and widely held assumption is that child care provided by anyone other than the child's mother is *non-normative* (it's not how most children are cared for). This partly reflects the continuing influence of Bowlby's theory of attachment. However, shared child care is actually a normative experience for contemporary American (and British) children, the vast majority of

According to Bowlby, a child whose mother goes out to work experiences maternal deprivation. If this happens during the child's first year (before an attachment has formed), an attachment may not develop at all (strictly, this is privation). If it happens after an attachment has developed, the child will be distressed, may experience separation anxiety, and so on (see above).

The results have tended to show that there's no weakening of the attachment to the mother resulting from the daily separations involved in daycare. Provided the daycare is *stable* and of a reasonably *high quality,* children don't suffer any ill effects and will benefit from it in certain respects (Schaffer, 1996a).

However, Belsky & Rovine (1988) concluded that infants were more likely to develop insecure attachments if they'd been receiving daycare for at least four months before their first birthday and for more than 20 hours per week. Although many children 'at risk' develop secure attachments, they're also more likely to develop insecure attachments than children who stay at home (see Table 32.2).

However, Belsky and Rovine's findings were obtained exclusively from one method of assessing attachment, namely the SS (see Table 32.1). Clarke-Stewart (1989) argues that this is an inappropriate technique for children in daycare. As we saw earlier, the SS is based on the assumption that repeated separations from the mother put children under stress, and so highlight their attempts at security-seeking. But daycare children are used to such separations and so may not experience stress. When they respond to the mother's return in the SS with (what looks like) indifference, they may be showing independence and self-reliance, not the 'avoidance' or 'resistance' that are used to classify children as insecurely attached (see Critical Discussion 32.2). According to Schaffer (1996a):

It is possible that the Strange Situation procedure is not psychologically equivalent for children of working and of non-working mothers. If that is so, it becomes even more important to ensure that any conclusions are based on a variety of assessment techniques.

ASK YOURSELF...

- If daycare were harmful to young children's attachments, what kind of distribution of secure and insecure attachments would you expect among those whose mothers work compared with those who don't (e.g. what percentage of type A and type C attachments)?

- The observed distribution of insecure infants of working mothers in the USA (22 per cent type A; 14 per cent type C) is virtually identical to the overall distribution for studies around the world (21 per cent and 14 per cent, respectively, based on almost 2000 children of mainly non-working mothers: van Ijzendoorn & Kroonenberg, 1988).
- In theory, an attachment is a relationship, not a global personality trait (see page 549). If the children of working mothers are more insecure with them, this doesn't necessarily mean that they're emotionally insecure in general. We need to assess their emotional health in a range of situations, with a variety of attachment figures. Several studies have shown that children who were in daycare as infants do as well as those who weren't, using measures of security, anxiety, self-confidence and emotional adjustment (Clarke-Stewart, 1989).

CRITICAL DISCUSSION 32.4 To work or not to work?

- As Horwood & Fergusson (1999) point out, much of the research into the effects of daycare has been carried out in the USA. The conclusions from these studies may not apply to other societies and cultures where patterns of maternal, and paternal, participation in the labour force and at home may differ from those in the USA.
- According to Schaffer (2004), it's not the *fact* that mothers work that affects the child (just as it's not divorce as such that's harmful: see above). Rather there's a whole range of factors, such as her ability to cope with her occupational and domestic duties, how much support she receives from her husband/partner and other relatives, her motivations for working and the effect on her self-esteem (as well as the daycare itself) that really make a difference:

  ... What can be safely concluded is that, where conditions are optimal, children of employed mothers may actually benefit compared with those of non-employed mothers, largely as a result of extra experiences with other adults and with peers in day-care settings ... (Schaffer, 2004)

- Even in the early years, 24-hour-a-day mothering needn't be regarded as a necessary prerequisite for healthy psychological development (Gottfried *et al.*, 2002).
- According to Clarke-Stewart (1989):

  Maternal employment is a reality. The issue today, therefore, is not whether infants should be in day care but how to make their experiences there and at home supportive of their development and of their parents' peace of mind.

Privation

As we noted earlier, privation is the failure to develop an attachment to any individual. Given the importance of the child's first relationship as a model or prototype of relationships in general, failure to develop an attachment of any kind is likely to affect adversely all subsequent relationships.

Harlow's research (see above) showed that monkeys brought up with only surrogate mothers were very disturbed in their later sexual behaviour. For example, females had to be artificially inseminated because they wouldn't mate naturally. The unmothered females also became very inadequate mothers, rejecting their infants whenever they tried to cling to their bellies and, literally, walking all over them.

Affectionless psychopathy

According to Bowlby, maternal deprivation in early childhood causes *affectionless psychopathy*. This is the inability to care and have deep feelings for other people and the consequent lack of meaningful interpersonal relationships, together with the inability to experience guilt.

KEY STUDY 32.4 Growing up with TB (Bowlby *et al.*, 1956)

- Bowlby *et al.* studied 60 children aged 7–13 who'd spent between five months and two years in a tuberculosis (TB) sanatorium (which provided no substitute mothering) at various ages up to four.
- About half had been separated from their parents before they were two years old.
- When compared with a group of non-separated 'control' children from the same school classes, the overall picture was that the two groups were more similar than different.
- The separated children were more prone to 'daydreaming', showed less initiative, were more over-excited, rougher in play, concentrated less well, and were less competitive. But they weren't more likely to show affectionless psychopathy, regardless of when their separation had occurred (before or after two).

Bowlby *et al.* admitted that 'part of the emotional disturbance can be attributed to factors other than separation', such as the common occurrence of illness and death in the sanatorium children's families. So, there was very little evidence for the link between affectionless psychopathy and *separation* (or *bond disruption*). However, Bowlby may have provided evidence for an association with privation instead (a failure to form bonds in early life). According to Rutter (1981), privation is likely to lead to:

- an initial phase of clinging, dependent behaviour
- attention-seeking, and uninhibited, indiscriminate friendliness
- a personality characterised by lack of guilt, an inability to keep rules, and an inability to form lasting relationships.

Are the effects of privation reversible?

Suomi & Harlow (1972) found that the effects on rhesus monkeys of being reared in isolation from other monkeys (their mothers or siblings) could be reversed, or at least moderated. This was achieved by allowing them to have extensive contact with 'monkey therapists' (young, normally reared, monkeys). In humans, there are (at least) three kinds of study that demonstrate that it's possible to undo the effects of early privation.

1. *Case studies* of children who've endured extreme early privation, often in near complete isolation. Examples include the Czech twins studied by Koluchova (1972, 1991: see Case Study 32.1) and the concentration camp survivors (Freud & Dann, 1951: see Case Study 32.2).
2. Studies of *late adoption:* children raised in institutions are adopted after Bowlby's critical period for attachment development (12 months for most children, up to two-and-a-half/three years for the rest). Studies include those of Tizard and her colleagues (e.g. Hodges & Tizard, 1989: see Key Study 32.5), and Chisolm *et al.* (1995: see Key Study 32.6).
3. Studies of *developmental pathways* (see page 558).

Studies of extreme privation

This represents the toughest test of the hypothesis that early experience, important at the time, will have long-term effects only if similar experiences occur subsequently (Clarke & Clarke, 2000). What happens to children who suffer extreme early privation but are then 'rescued' and enjoy much improved conditions?

CASE STUDY 32.1 The case of PM and JM (Koluchova, 1972, 1991)

- Identical twin boys, born in 1960 in the former Czechoslovakia, lost their mother shortly after birth. They were cared for by a social agency for a year, then fostered by a maternal aunt for a further six months. They then went to live with their father who'd remarried, but his new wife proved to be excessively cruel to the twins, banishing them to the cellar for the next five-and-a-half years. They were also harshly beaten.
- When discovered in 1967, they were very short in stature, had rickets, no spontaneous speech (communicating largely by gestures), and were terrified of many aspects of their new environment.
- Having been removed from their parents, they first underwent a programme of physical rehabilitation and entered a school for children with severe learning difficulties. They were subsequently adopted by two exceptionally dedicated women.
- Academically, they caught up with their peers and achieved emotional and intellectual normality. At follow-up in 1974 (at age 14), they showed no signs of psychological abnormality or unusual behaviour. They'd gone on to technical school, training as typewriter mechanics, but later went on to further education, specialising in electronics.
- They both had very good relationships with their adoptive mothers, their adopted sisters, and the women's relatives. Both were drafted for national service, and later married and had children. At the age of 29, they were said to be entirely stable, with no abnormalities, and enjoying warm relationships. One had become a computer technician and the other a technical training instructor (Koluchova, 1991).

Clearly, the twins' experience of prolonged privation didn't predestine them to a permanent condition of severe handicap (Clarke & Clarke, 2000).

Like the study of the Czech twins, the fate of the Holocaust survivors seems to highlight the fundamental importance of having *somebody* (not necessarily a mother-figure) with whom to form an emotional bond. According to Tizard (1986), Freud and Dann's study:

... provides ... evidence of the protective function of attachments in development, even when they are not directed to the mother, or indeed to an adult ...

In other words, it's *attachment formation* as such that's important for the development of social and emotional relationships in later childhood and adulthood, rather than who the particular *attachment figure* is.

CASE STUDY 32.2 Childhood survivors of the Holocaust (Freud & Dann, 1951)

- Anna Freud and Sophie Dann studied six German-Jewish orphans rescued from a concentration camp at the end of the Second World War. They'd all been orphaned when a few months old, after which they were kept together as a group in a deportation camp. They were cared for by camp inmates, who were successively deported to Auschwitz. One of the inmates who survived later said, 'We looked after the bodily welfare of the children as much as possible ... but it was not possible to attend to their other needs' (Moskovitz, 1985).
- During their time in the camp, they'd been subjected to many terrifying experiences, including witnessing camp hangings. On release, at age three, all were severely malnourished, normal speech had hardly developed, and they'd developed the same kind of intense attachment to each other that children normally have for their parents – but there was none of the jealousy and rivalry usually found among siblings. They refused to be separated even for a moment, and were extremely considerate and generous to each other. But they showed cold indifference or fearful hostility towards adults. After the camp was liberated, they were flown to Bulldog's Bank in England.
- They obviously cared greatly – and only – for each other. But gradually they began to form attachments to specific adult caretakers, and they showed a spurt in social and language development. In a one-year follow-up, it was clear that they were hypersensitive, aggressive, and difficult to handle. But, as Freud and Dann observe:

  ... they were neither deficient, delinquent nor psychotic. They ... had mastered some of their anxieties, and developed social attitudes. That they were able to acquire a new language in the midst of their upheavals, bears witness to a basically unharmed contact with their environment.

- Within the next two years, all but one of the children had been adopted. All six were traced and interviewed by Moskovitz during 1979 and 1980 (Moskovitz, 1983, 1985). While it had previously been thought that they'd been irreparably damaged:

  What now became apparent ... was the wide range of adaptation when there was theoretically no reason to see anything positive ... Many made adaptations that are not only impressive but inspiring ... (Clarke & Clarke, 2000)

Studies of late adoption

Tizard (1977) and Hodges & Tizard (1989) studied children who, on leaving care between the ages of two and seven, were either adopted or returned to their own families. The institutions they grew up in provided good physical care and appeared to provide adequate intellectual stimulation. However, staff turnover was high, and they operated a policy against allowing strong attachments to develop between the staff and children. Consequently, the children had little opportunity to form close, continuous relationships with adults. Indeed, by age two, they'd been looked after for at least a week by an average of 24 different caregivers. By age four, this had risen to 50. The children's attachment behaviour was very unusual and, in general, the first opportunity to form long-term attachments came when they left the institutions and were placed in families.

By age eight, the majority of the adopted children had formed close attachments to their adoptive parents (who very much wanted a child), despite the lack of early attachments (Tizard & Hodges, 1978). But only some of those children returned to their own families had formed close attachments. The biological parents often had mixed feelings about having the child back, with other children competing for their attention (as well as material hardship). As reported by their parents, the ex-institutional children as a whole didn't display more problems than a comparison group that had never been in care. But their teachers described them as displaying attention-seeking behaviour, restlessness, disobedience and poor peer relationships.

KEY STUDY 32.5 Ex-institution children at age 16 (Hodges & Tizard, 1989)

- At age 16, the family relationships of most of the adopted children seemed satisfactory, for both them and their parents. They differed little from a non-adopted comparison group who'd never been in care. Hence, early institutional care hadn't necessarily led to a later inability to form a close attachment to parents (contrary to Bowlby's predictions).
- By contrast, those children returned to their families still suffered difficulties and poor family relationships. These included mutual difficulty in showing affection, and the parents reported feeling closer to the children's siblings than to the returned children.
- *Outside* the family, however, *both* the adopted and returned children showed similar relationships with peers and adults. Compared with a control group, they were:
  - (a) still more likely to seek adult affection and approval
  - (b) still more likely to have difficulties in their relationships with peers
  - (c) less likely to have a special friend or to see peers as sources of emotional support
  - (d) more likely to be friendly to any peer rather than choosing their friends.

These findings *are* consistent with Bowlby's MDH.

Hodges and Tizard's research indicates that children who fail to enjoy close and lasting relationships with adults in the first years of life can make such attachments later on. But these don't arise automatically, simply by being placed in a family. Rather, they depend on the adults concerned and how they nurture such attachments. Also, if these children experience difficulties in their relationships outside the family, they may have difficulties in future adult relationships and with their own children.

These ex-institution children have now been followed up into adulthood (average age 31 years). This took the form of postal questionnaires (Hodges *et al.*, in preparation; Jewett, 1998), and interviews using the adult attachment interview (see below) with a subsample of the ex-institution group (Williams, 1999).

There were very few significant differences between the ex-institution group and the comparison group, including evidence of psychiatric disorder. However, the former consistently reported difficulties in relationships with friends, partners and children, and significantly greater difficulties in relationships with their families of upbringing. They also reported a tendency to be over-aggressive in their interpersonal relationships, and to be independent and self-reliant.

But they also reported more rewarding intimate friendships, with higher levels of companionship, and higher self-esteem than the comparison group (these differences weren't statistically significant). While acknowledging the small sample size (22 ex-institution, 23 comparisons), Hodges (personal communication, 2000) states that:

> ... the evidence seems to support both the view that the effects of earlier adversity fade given the right later circumstances, and the view that there are some enduring effects producing continuities in personal characteristics.

KEY STUDY 32.6 Late adoption of Romanian orphans (Chisolm *et al.*, 1995)

- Romanian orphans, reared in extremely poor conditions in large-scale institutions, were adopted (by Canadian families) between the ages of eight months and five-and-a-half years
- Even after several years of privation, these children were able to form attachments to their adoptive parents. However, their institutional experience seemed to have left its mark. For example, their behaviour was often described as *ambivalent* (they simultaneously wanted contact and resisted it: see Table 32.2). Also, they weren't easily comforted when distressed.
- Follow-up is needed to see if life in a loving family can eventually overcome this impairment. Based on their intellectual recovery, there are good reasons for being optimistic (Schaffer, 1998).

Developmental pathways

Quinton & Rutter (1988) wanted to find out whether children deprived of parental care become depriving parents themselves. They observed one group of women, brought up in care, interacting with their own children, and compared them with a second group of non-institutionalised mothers. The women brought up in care were, as a whole, less sensitive, supportive, and warm towards their children. This difference could be explained in terms of both:

- various subsequent experiences the women had as a result of their early upbringings (such as teenage pregnancy, marrying unsupportive spouses, and marital breakdown)
- their actual deprived childhoods.

However, there was also considerable variability *within* the group brought up in care, with some women displaying good parenting skills. This could be explained in terms of *developmental pathways* (what Schaffer, 2004, calls *developmental trajectories*). For example, some of the women had more positive school experiences than others. This made them three times more likely as adolescents or young adults to make proper career and marriage partner choices (Rutter, 1989). Such positive experience represents an escape route from the early hardships associated with being brought up in care.

Similar adverse childhood experiences can have multiple outcomes (Schaffer, 1996b, 2004). *Starting off* at a disadvantage doesn't necessarily mean having to *finish up* at a disadvantage. In other words, early disadvantage doesn't inevitably set off a chain reaction of more and



Figure 32.4 A simplified adaptive chain of circumstances in institution-raised women (based on Quinton & Rutter, 1988; Rutter, 1989)

more disadvantage. Periodically, individuals reach *turning points* where choices must be made, and the path that's taken can either reinforce or help to minimise the consequences of previous experience (Schaffer, 2004).

CONTINUITY BETWEEN EARLY AND LATER ATTACHMENT PATTERNS

The effects of early attachments on later adult relationships

Although until recently attachment was studied almost exclusively within parent–child relationships, Bowlby (1977) maintained that 'attachment behaviour is held to characterise human beings from the cradle to the grave'. According to Hazan & Shaver (1987), attachment theory, as developed by Bowlby and Ainsworth in particular, offers a valuable perspective on adult romantic love, helping to explain both positive emotions (caring, intimacy, and trust) and negative emotions (fear of intimacy, jealousy, and emotional 'ups and downs').

Hazan and Shaver were the first to apply Ainsworth *et al.*'s three basic attachment styles to adult–adult sexual/romantic relationships. Their study tried to answer the question: how are *adults'* attachment patterns (in their adult relationships) related to their *childhood* attachments to their parents?

KEY STUDY 32.7 Romantic love conceptualised as an attachment process (Hazan & Shaver, 1987)

- Ainsworth *et al.*'s three attachment styles were 'translated' in a way that would make them suitable for the study of adult attachments. As part of a 'love quiz' in a local newspaper, respondents were asked to indicate which of three descriptions best applied to their feelings about romantic relationships:

Table 32.3 Responses to the question 'Which of the following best describes your feelings?'

Classification	Response	% of respondents
Secure	I find it easy to get close to others and am comfortable depending on them and having them depend on me. I don't worry about being abandoned or about someone getting too close to me	56
Anxious–avoidant	I am somewhat uncomfortable being close to others. I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being	24
Anxious–ambivalent	I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away	20

- They were also asked to complete a simple adjective checklist describing their childhood relationships with their parents (their recollections of the kind of parenting they received). This was then correlated with their chosen attachment style.

Table 32.4 Correlation between attachment style and type of parenting in adult respondents

Attachment style	Type of parenting
Secure	Readily available, attentive, responsive
Anxious–avoidant	Unresponsive, rejecting, inattentive
Anxious–ambivalent	Anxious, fussy, out of step with child's needs; only available/responsive some of the time.

ASK YOURSELF...

- Compare Hazan and Shaver's findings with those of Ainsworth *et al.*
- Overall, do they match?

The correlations shown in Table 32.4 closely mirror Ainsworth *et al.*'s findings with 12–18-month-olds. Although these results provided encouraging support for an attachment perspective on romantic love, Hazan and Shaver warned against drawing any firm conclusions about the continuity between early childhood and adult experience. It would be excessively pessimistic, at least from the point of view of the insecurely attached person, if continuity were the rule, rather than the exception. The correlations suggest that as we go further into adulthood, continuity with our childhood experiences *decreases*. The average person participates in several important friendships and love relationships, which provide opportunities for revising our *mental models* (or what Bowlby, 1973, called *internal working models*/IWMs) of self and others (see below).

Intergenerational continuity

Another way of looking at the continuity between early and later attachment patterns is to ask how *parents'* attachment styles are related to their *children's* attachment styles. In other words, do people parent their children as they themselves were parented? This is the issue of *inter-*



Rap singer Eminem's lyrics sometimes tell of a very disturbed relationship with his mother. How might this influence his relationship with his own children?

generational continuity (or *intergenerational transfer* of attachment patterns: Meins, 2003).

A commonly used measure of how parents are/were attached to their own parents is the *adult attachment interview* (AAI). Apart from the SS, the AAI is probably the most widely used and best-developed measure of attachment (Goldberg, 2000). It's based on the assumption that what's crucial for predicting parenting behaviour isn't so much the objective facts about our early attachments, but rather how we *construe* these facts, that is, the nature of our IWMs.

Box 32.5 The adult attachment interview (AAI) (Main *et al.*, 1985)

- The AAI is a structured interview, comprising 15 questions designed to tap an individual's experience of attachment relationships in childhood, and how s/he considers those experiences to have influenced later development and present functioning.
- More specifically, for each parent, the person is asked to choose five adjectives which best describe that relationship during childhood. The person then has to illustrate each of these choices by drawing on childhood memories.
- Later, the person is asked how they reacted when upset, to which parent they felt closest and why, whether they ever felt rejected or threatened, why parents may have acted as they did, how these relationships may have changed, and how these earlier experiences (including major loss up to the present time) may have affected their adult functioning and personality.
- Each interview (which lasts about 90 minutes) is classified as a whole, giving an overall 'state of mind' regarding attachment. Four attachment styles are possible:
  - **Secure/autonomous (F):** People with this style discuss childhood experiences openly, coherently and consistently, acknowledging both positive and negative events and emotions. This is the most common style among parents of *securely attached* infants.
  - **Dismissing (D):** These individuals seem cut off from the emotional nature of their childhood, denying especially their negative experiences and dismissing their significance. The importance of attachment experiences is minimised. They appear cooperative, but contradictions make them seem dishonest. This is the most common style among parents of *anxious–avoidant* infants.
  - **Preoccupied/entangled (E):** Such people are overinvolved with what they recollect, appearing so overwhelmed that they become incoherent, confused, even angry. They're still actively trying to please their parents. This is the most common style among *anxious–resistant* infants.
  - **Unresolved/disorganised (U):** This style describes mainly those who've experienced a trauma (which may include physical or sexual abuse), or the early death of an attachment figure, and who haven't come to terms with it or worked through the grieving process (see Chapter 39). This is the most common style among parents of *disorganised* infants.

(Based on Goldberg, 2000; Heard & Lake, 1997; Main *et al.*, 1985; Schaffer, 1996a)

So, the AAI may predict how the mother's child will be attached to her as determined by the SS (Heard & Lake, 1997; Main, 1995). However, it's possible that these findings are affected by the mother's *selective recall:* how she remembers her childhood might be influenced by her *current* experiences with her own child.

ASK YOURSELF...

- How could you try to control this potential confounding variable?

Fonagy *et al.* (1991) tried to rule out this possibility by giving the AAI to 96 women *before* the birth of their children (i.e. during pregnancy), then classifying the children (using the SS) when they were 12 and 18 months old. As Table 32.5 shows, Main *et al.*'s (1985) results (see Box 32.5) were largely replicated (with the exception of the preoccupied mothers). The correlation was especially strong for the autonomous mother–secure child pairing.

These results have been replicated in later studies by Fonagy and his colleagues, for both infant–mother attachment (Fonagy *et al.*, 1994; Steele *et al.*, 1995) and father–infant attachment (Steele *et al.*, 1996). Overall, mothers' perceptions of their own childhood attachments predicted their children's attachments to them 75 per cent of the time. While acknowledging the need to explain the 25 per cent 'failure' rate (Clarke & Clarke, 2000), how can we explain this evidence for intergenerational continuity?

Table 32.5 Mother's prenatal AAI classification and children's Strange Situation classification (based on Fonagy *et al.*, 1991)

	Classification of the mother		
Classification of the children	**Dismissing**	**Autonomous**	**Preoccupied**
Anxious–avoidant	15	8	7
Secure	5	45	5
Anxious–resistant	2	6	3

Inner working models (IWMs)

According to Bowlby (1973), expectations about the availability and responsiveness of attachment figures are built into our IWMs of attachment. These reflect memories and beliefs stemming from our early experiences of caregiving, which are carried forward into new relationships, both during childhood and beyond. They play an active role in guiding perceptions and behaviour.

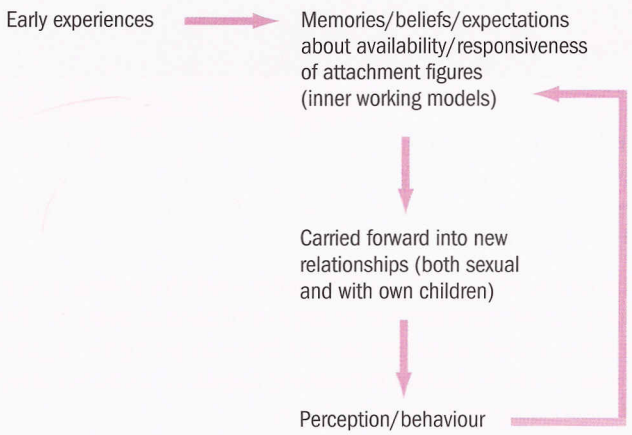


Figure 32.5 How inner working models link early caregiving experiences and later relationships

Bowlby (1973) argued that, at least under normal circumstances, our IWMs are resistant to change:

> Because ... children tend unwittingly to identify with parents and therefore to adopt, when they become parents, the same patterns of behaviour towards children that they have themselves experienced during their own childhood, patterns of interaction are transmitted, more or less faithfully, from one generation to another.

However, IWMs usually can be updated or modified, as new interactions develop. While for young children such change must be based on actual physical events, such direct interaction isn't necessary in older children and adults. Main *et al.* (1985), for example, found that some adults, who reported being insecure in their relationships with their own parents, managed to produce children who were securely attached, at both twelve months and six years. They'd mentally worked through their unpleasant experiences with their parents, and their IWMs were now more typical of secure types (Hazan & Shaver, 1987).

Van Ijzendoorn & Bakermans-Kranenburg (1996) reviewed 33 studies involving the AAI. Similar proportions of mothers, fathers and older adolescents fell into the four attachment categories, but people from lower socio-economic groups were slightly more likely to be classified as dismissing. The largest difference is for people having treatment for mental disorder, who are very unlikely to score as autonomous.

Some mothers who'd had very negative early experiences seemed to have come to terms with them, explaining them in rational terms (such as marital stress, overwork). They were more likely to have secure infants, perhaps because they'd successfully updated their own IWMs. In fact, Bowlby (1988) recognised that attachment behaviour and IWMs *cannot* be regarded as fixed in infancy and unchanging throughout life.

CRITICAL DISCUSSION 32.5 The effects of 'reduced' or 'minimal' parenting

- Due to advances in reproductive technologies, it's become possible for children to be conceived and born 'artificially' to parents who'd otherwise remain childless:
  - *in vitro fertilisation* (IVF) – sperm and egg are provided by the father and mother, but are combined in the laboratory
  - *egg donation* – the father's sperm fertilises another woman's egg, so the child will be genetically related only to him
  - *donor insemination* (DI)/*artificial insemination by donor* (AID) – the mother is impregnated by the sperm of a male other than the husband, so the child will be genetically related only to her.
- Almost 18,000 babies have been born in the UK through donated gametes (sperm and eggs) and embryos since the Human Fertilisation and Embryology Authority (HFEA) was created in 1991. Currently, birth certificates reveal nothing about the genetic father, and the law, as it stands, prevents revelation of the donor's identity. But that's set to change.
- There are various potential problems that may be encountered: the often stressful nature of prolonged fertility treatment, the secrecy surrounding the act of conception, the possibility of tension between the parents because one of them is infertile, as well as that parent's feelings of inadequacy or guilt, children's realisation that they're somehow different, and the absence of a genetic link with one or both parents involved in some of the techniques used (Schaffer, 2004).

ASK YOURSELF...

- What do you think the effects on children brought into the world by such 'unnatural' means might be?

- Golombok and her colleagues (Golombok *et al.*, 1995, 1999, 2001) have conducted some of the few follow-up studies of children conceived in these various ways. They compared families with a child (aged between 4 and 12) conceived by each of the three methods described above with two control groups: (a) naturally conceived children; and (b) children adopted at birth.
- A wide range of measures was used to assess the children's socio-emotional development and cognitive competence. Also, parents were assessed for their warmth, emotional involvement with the child, and the amount of stress they experienced in the course of parenting.
- There was no evidence that these new reproductive technologies have negative consequences – for either child or parent. Neither lack of genetic relationship nor manner of conception had any implications for their well-being.
- Together with studies of adopted children (see above), Golombok's research shows that:

  ... a 'blood-bond' is not necessary for the development of sound parent–child relationships: this can be found even when the role of parenthood is fragmented between a biological and psychological parent ... (Schaffer, 2004)

OTHER ATTACHMENTS

Relationships with siblings

ASK YOURSELF...

- What is it about your relationships with brothers and/or sisters that makes them special?
- Are you closer to one sibling than the others? If so, why?
- If you're an only child, do you feel you've 'missed out'?
- If you're the younger/older of two, how might this have affected your development?

According to Dunn (2000):

... our relationships with our siblings are the longest-lasting we'll probably have – longer than those with our parents or partners, or with our children. Indeed, towards the end of the lifespan, relationships between siblings take on particular importance for many people as sources of support ...

Like friendships (see below), sibling relationships are *horizontal* (Hartup, 1989), that is, reciprocal and egalitarian, while relationships with parents (and other adults) are *vertical*. Children need to experience both types of relationship (Bee, 2000). While relationships with friends and parents seem to be more important for most school-age children than those with their siblings, there's enormous variation.

Box 32.6 Patterns/styles of sibling relationships

Based on direct studies of young children, as well as retrospective reports by young adults about their sibling relationships when they were of school age, several patterns/styles have emerged.

- **Caregiver:** One sibling serves as a kind of quasi-parent for the other. This style is most commonly found between an older sister and younger brother.
- **Buddy:** Both siblings try to be like one another and take pleasure in being together. This is rather more common among pairs of sisters.
- **Critical/conflictual:** One sibling tries to dominate the other, teasing and quarrelling.
- **Rival:** Similar to the critical relationship, but also lacking friendliness or support. This seems to be most common in boy/boy pairs.
- **Casual/uninvolved:** The siblings have relatively little to do with each other.

(Based on Bee, 2000)

Sibling relationships are intense and intimate, and this, together with the significance of sharing parents, means that the relationships have considerable potential for affecting children's wellbeing. For Dunn:

The nature of the sibling relationship – with its uninhibited, no-holds barred expression of negative emotions in many families, and the processes of comparison between siblings – suggests it may well be important in fostering aggression, and in feelings of inadequacy and low self-esteem.

Self-esteem is discussed in Chapter 33. The other side of the coin is that many siblings are extremely affectionate, supportive and companionable. But whatever its emotional colour, the sibling relationship offers children unique opportunities for learning about others and themselves.



Venus and Serena Williams holding the Women's Doubles Trophy at Wimbledon in 2000

Attachment to parents and to siblings

Some studies have found that children who are securely attached to their parents have friendly sibling relationships. But others report findings more consistent with a 'compensatory model', that is, intensely supportive sibling relationships are found in families where the parents are distant and uninvolved with their children. This latter finding is more likely, however, where the family is experiencing extreme stress and relationship difficulties (Dunn, 2000).

Siblings and the development of understanding

The study of siblings has contributed materially to our understanding of children's discovery of the mind (Dunn, 1999: see Chapter 40), including *individual differences.* Children who've engaged frequently in shared pretend play with a sibling, and talked about mental states, are especially successful on tasks that assess understanding of emotion and mental states. Although the data are only correlational:

> ... social processes are likely to play a significant role in shaping the remarkable individual differences in what children understand about others. These differences are linked to moral sensibility and adjustment to school, as well as to relationships with others ... (Dunn, 2000)

Friendships and peer relationships

Attachment and peer relationships

According to Goldberg (2000), the most impressive data on the link between attachment and peer relationships come from the Minnesota longitudinal study (Troy & Sroufe, 1987). Attachment was assessed at 12 and 18 months using the SS, then again at age four, in middle childhood, and at ages 13 and 15.

At age four, *securely attached* children were ranked highest in social competence, were the least isolated and the most popular. They were also the most likely to respond empathically to another child's distress (see Chapter 35), and least likely to be bullies or bullied. *Bullies* were most likely to be classified as *anxious–avoidant,* while victims were most often *anxious–resistant* (see Chapter 29).

In middle childhood, securely attached children were twice as likely as insecure children to form friendships, spend time with a special friend, and become involved in group activities. As adolescents, the securely attached were rated higher on couple relationships and relationships with mixed-sex groups, self-confidence, and showing leadership qualities.

Pre-school friendships

More than 50 per cent of three- and four-year-olds have at least one mutual friend, and most of these friendships last for at least six months (Dunn, 1993; Howes, 1996). Although not nearly as deep or intimate as among school-age or adolescent pairs, these early friendships show more mutual liking and reciprocity, more extended interactions, more positive and less negative behaviour, more forgiveness, and more supportiveness in novel situations than is true of non-friend pairs of the same age. They're also more likely to 'make up' after a quarrel (Dunn, 1993; Hartup *et al.*, 1988). These early friendships are more likely among same-sex pairs.

School-age friendships

Peers become more important at school-age. Among 7–10-year-olds, playing with friends (along with watching TV) takes up almost all the time they're not in school, eating, and sleeping. They centre around shared play interests and activities (rather than shared values or attitudes), and this 'concreteness' is entirely consistent with their self-concept at this age (see Chapter 33) and with their level of cognitive development (see Chapter 34) (Bee, 2000).

Peer-group interests are highly *gender-segregated,* which appears to be a universal pattern. In the case of girls, this may be because they're 'put off' by boys' typical rough-and-tumble style of play and strong emphasis on competition and dominance, and they also find it difficult to influence boys (Maccoby, 1990). But, if anything, boys' same-gender preferences are *stronger* than girls' (Bee, 2000).

Sex differences in friendship quality

According to Waldrop & Halverson (1975), boys' relationships are *extensive,* while girls' are *intensive.* Boys' friendship groups are larger and more accepting of newcomers than girls', and boys play more outdoors. Girls are more likely to play indoors and in smaller groups or pairs, and are less accepting of newcomers (Bee, 2000). The level of competition between pairs of male friends is higher than it is between strangers – the opposite of girls. Girls' friendships also involve more agreement, compliance and self-disclosure.

However, collaborative and cooperative exchanges are the most common forms of communication in both boys' and girls' friendships. These differences may well have enduring implications for patterns of friendship over the entire lifespan (Bee, 2000).

CONCLUSIONS

According to Clarke & Clarke (1998):

> The evidence is firm; while there is a range of outcomes, early social experience by itself does not predestine the future.

Similarly:

> ... the life path is not predetermined by the experiences of the early years alone, but results from the longer-term cumulative development of genetic and environmental interactions and transactions ... (Clarke & Clarke, 2000)

Schaffer (1998) believes that psychological development is far more flexible than was previously thought. Our personalities aren't fixed once and for all by events in the early years. Given the right circumstances, the effects of even quite severe and prolonged deprivation can be reversed. As Clarke & Clarke (2000) conclude:

> ... there is no suggestion that what happens in the early years is unimportant. For most children, however, the effects of such experiences represent no more than a first step in an ongoing life path ... There is little indication that any one point of development is more critical than another; all are important ...

CHAPTER SUMMARY

- **Sociability** is necessary for the development of **attachments**, which are intense, enduring emotional ties to specific people. The **mother–child relationship** is usually taken as a model for all later relationships.
- The attachment process can be divided into **pre-attachment**, **indiscriminate**, **discriminate**, and **multiple attachment phases**.
- The development of specific attachments is shown through **separation anxiety**. Some babies also display the **fear-of-strangers response**.
- According to **'cupboard love' theories**, attachments are learned through satisfaction of the baby's need for food. However, Schaffer and Emerson found that not only were infants attached to people who didn't perform caretaking activities, but those who did weren't always their primary attachment figures.
- According to Bowlby, new-born humans are **genetically programmed** to behave towards their mothers in ways that ensure their survival. There's a **critical period** for attachment development, and attachment to the mother-figure is based on **monotropy**.
- The **Strange Situation** (SS) is used to classify the baby's basic attachment to the mother into three main types: **anxious–avoidant**, **securely attached** and **anxious–resistant**. The crucial feature determining the quality of attachment is the mother's **sensitivity**.
- Patterns of attachment to mothers and fathers are **independent**. Attachment type may change depending on variations in the family's circumstances, and there are also **cultural variations** in the distribution of attachment types.
- Bowlby's **maternal-deprivation hypothesis** (MDH) was used to explain the harmful effects of growing up in institutions. But this fails to recognise the understimulating nature of the institutional environment, and to disentangle the different kinds of retardation produced by different types of **privation**.
- According to Bowlby's theory, **short-term deprivation** produces **distress**. **Privation** produces long-term **developmental retardation** (such as **affectionless psychopathy**).
- Parental death and divorce are examples of **long-term deprivation**, and are associated with long-term effects, particularly **separation anxiety**.
- Children whose parents **divorce** are inevitably adversely affected, both in the short and long term. But most children eventually adapt. **Inter-parental conflict** is the single most damaging factor.
- Provided the **stability** and **quality** of **daycare** are satisfactory, a child's attachment to its mother shouldn't be weakened. Since children in daycare experience regular separations, the SS may be an inappropriate method for assessing their attachments.
- Case studies of children who've endured **extreme privation**, studies of **late adoption**, and Quinton and Rutter's study of **developmental pathways**, all indicate that the effects of early privation are **reversible**.
- There appears to be nothing special about early experiences, and our personalities aren't determined once and for all by early events. The 'same' early experience may have many alternative outcomes.
- **Sibling relationships** are among the most important – and longest-lasting – we experience. They can affect many aspects of development, including aggressiveness, self-esteem, and the understanding of emotion and mental states.
- **Securely attached** infants are more likely to be socially competent and popular with their peers throughout childhood and adolescence. They're also more self-confident and show more leadership qualities.
- **Friendships** become quite common at ages three and four, becoming more important amongst school-age children. Despite some important **gender differences** in friendship quality, **collaboration** and **cooperation** are the most common forms of communication in both boys' and girls' friendships.

Links with other topics/chapters

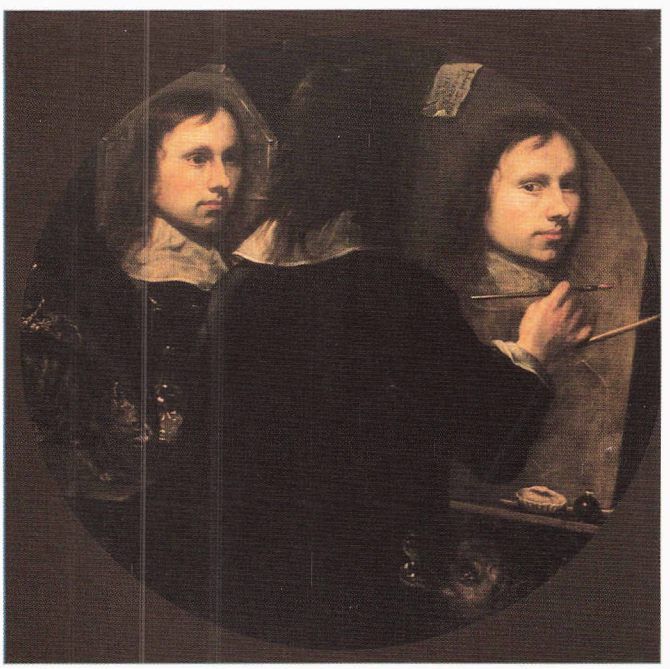
- Babies' sociability has its adult counterpart in the *need for affiliation*, the basis of *interpersonal attraction* (Chapter 28).
- The pre-attachment phase of attachment development is supported by all the research that demonstrates babies' *preference for human faces* (*facedness*) over aspects of the physical world. This helps to explain the relative ease with which they learn to recognise familiar faces. Also, the baby's ability to imitate facial expressions (Meltzoff & Moore, 1977) may facilitate its relationship with attachment figures (Miller, 2002) (Chapter 16).
- Object permanence (necessary for specific attachments to develop) is part of the *object concept* (Chapter 16) and an important part of the *sensorimotor stage* of Piaget's *theory of cognitive development* (Chapter 34).
- Discussion of fathers as (principal) parents raises some of the same issues as are raised by discussion of *gay and lesbian couples as parents* (Chapter 36).

- The claim that different attachment styles may be *adaptive* in different rearing environments is made by *evolutionary psychologists* (Chapter 2).
- Separation anxiety in the form of psychosomatic (*psychophysiological*) reactions refers to physical symptoms associated with/caused by *stress, anxiety* or other *psychological factors* (Chapter 12).
- The effects of divorce on children include *adolescent* behaviours (such as earlier age of having sex, teenage pregnancies and leaving home) (Chapter 37), earlier age of *cohabitation* and *marriage,* and more distant relationships with parents in *adulthood* (Chapter 38), greater frequency of *depression* (Chapter 44), and higher incidence of *antisocial* and *delinquent behaviour* during childhood and adolescence (Chapter 46).
- The effects on children of daycare is part of a wider debate about the *roles of men and women* and their respective responsibilities for/contributions to child care (Chapter 38).
- An assumption made by many psychologists (and a feature of *social representations* of the effects of early experience: Chapter 22) is that children are highly malleable and their early experiences determine the course of their personality once and for all. Both *Freud* and *Watson* argued that early experience has unique significance (Chapter 2).
- Hazan and Shaver's study can help to explain why some *romantic relationships* last and others don't – in terms of *incompatibility* between partners' attachment styles (Chapter 28).
- The distinction between horizontal and vertical relationships is useful for understanding how the parent–child relationship changes during *adolescence* (Chapter 37).
- *Adolescent peer relationships and friendships* are discussed in Chapter 37.

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Self-esteem
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33

DEVELOPMENT OF THE SELF-CONCEPT



INTRODUCTION AND OVERVIEW

According to Hampson (1995), the human capacity for self-awareness permits us to try to see ourselves as others see us. When personality psychologists study personality via self-reports, such as questionnaires (see Chapter 42), they're assessing people's perceptions of themselves. Social psychologists also study people's self-perceptions through their study of the *self-concept*.

The self-concept (or simply 'self') is clearly a *hypothetical construct:* it's a 'theory' each one of us develops about who we are and how we fit into society. It's repeatedly revised during childhood in the light of both cognitive development and social experience. On the one hand, as children get older they become more competent at self-awareness and more realistic; on the other hand, other people's perceptions and responses will come to play a more central role in shaping the nature of that awareness (Schaffer, 2004).

Adolescence is a crucial period for the development of the self-concept. A major account of how the self-concept changes in adolescence is Erikson's *psychosocial theory,* which is discussed in Chapter 37. But the formation of the self is never complete. At no time does the self function as a closed system – it's always affected by others' evaluations of us (Schaffer, 2004). This is consistent with the view of the self as 'social to the core' (Fiske, 2004). Even when tracing how self-perception changes in the individual, we'll see that this is an *inherently social process,* as reflected in the early theories of James, Cooley and Mead. More recent extensions of these see the self as *constructed in language* (e.g. Harré).

CONSCIOUSNESS AND SELF-CONSCIOUSNESS

ASK YOURSELF...

- What do you think is the difference between consciousness and self-consciousness?

When you look in the mirror at your face, you're both the person who's looking and that which is looked at. Similarly, when you think about the kind of person you are or something you've done, you're both the person doing the thinking and what's being thought about. In other words, you're both *subject* (the thinker or looker) and *object* (what's being looked at or thought about). We use the personal pronoun 'I' to refer to ourselves as subject, and 'me' to refer to ourselves as object, and this represents a rather special relationship we have with ourselves, namely *self-consciousness/self-awareness.*

While other species possess consciousness (they have sensations of cold, heat, hunger, thirst, and can feel pleasure, pain, fear, sexual arousal, and so on (they're *sentient* creatures), only humans possess self-consciousness. We often use the term 'self-conscious' to describe our response to situations where we're made to feel object-like or exposed in some way (for example, we leave home in the morning to discover our sweater's on back-to-front). But this is a *secondary* meaning: the *primary* meaning refers to this unique relationship in which the same person, the same self, is both subject and object.

What is the self?

'*Self*' and '*self-concept*' are used interchangeably to refer to an individual's overall self-awareness. According to Murphy (1947), 'the self is the individual as known to the individual', and Burns (1980) defines it as 'the set of attitudes a person holds towards himself'.

According to Leary (2004), the self is a *cognitive structure* that permits self-reflection and organises information about oneself. It also has *motivational features,* in particular:

- *self-consistency* (to maintain, if not verify, one's existing view of oneself)
- *self-evaluation* (self-assessment – to see oneself accurately)
- *self-enhancement* (to maintain a positive image of oneself).

One's existing view of oneself is one's *self*-image, and our evaluation of ourselves determines our *self*-esteem. Self-enhancement can be both private and public.

- *Private* self-enhancement also relates to *self-esteem.* According to Greenwald (1980), the *self-esteem motive* acts like a totalitarian political regime which suppresses information and rewrites history to preserve a particular desired image of the government. In the same way, the 'totalitarian ego' distorts facts about the self and rewrites one's memory of personal history in order to maintain one's own positive evaluation.
- *Public* self-enhancement relates to *self-presentation* (or *impression management*), our deliberate attempts to influence others' impressions of us (usually in a positive way: see Chapter 22).

Private vs public self

Murphy's and Burns' definitions of the self are really definitions of the *private* self. According to Leary (2004):

> ... at the most fundamental level, the self is the cognitive apparatus that permits self-reflexive thought – the cognitive structures and associated processes that permit people to take themselves as an object of their own thought and to think consciously about themselves ...

This describes the 'subject'/'object' relationship we discussed above (self-consciousness/awareness) and corresponds to the 'I'/'me' distinction. Leary claims that, strictly, there is only a private self. So, what does the *public* self refer to? It's been used to refer to three distinct entities:

1. the image we convey to others (including reputation and roles)
2. our beliefs about our public image (how we think others perceive us)
3. the impressions others actually form about us.

Whichever of these we mean, the term refers to a very different concept from the private, psychological self,

which allows us to think about and control these public impressions:

> ... this so-called public self resides either within the individual's own private sense of self or in others' minds, respectively. In either case, it is not a 'self' in the true sense of the term ... (Leary, 2004)

However, both Goffman's (e.g. 1971) *dramaturgical* approach, and the *social constructionist* approaches reject the view of the self as a private feature of individuals, seeing it as wholly *social/public* (see below).

Components of the self-concept

The self-concept is a general term that normally refers to three major components: *self-image, self-esteem,* and *ideal self.*

Self-image

ASK YOURSELF...

- Give 20 different answers to the question 'Who am I?'

Self-image refers to the way we describe ourselves, what we think we're like. One way of investigating self-image is to ask people the question 'Who am I?' 20 times (Kuhn & McPartland, 1954). This typically produces two main categories of answer.

1. *Social roles* are usually objective aspects of the self-image (e.g. son, daughter, brother, sister, student). They are 'facts' that can be verified by others.
2. *Personality traits* are more a matter of opinion and judgement, and what we think we're like may be different from how others see us. But how others behave towards us has an important influence on our self-perception (see below).

As well as social roles and personality traits, people's answers often refer to their *physical characteristics* (such as tall, short, fat, thin, blue-eyed, brown-haired). These are part of our *body image/bodily self,* the 'bodily me' which also includes bodily sensations, such as pain, cold and hunger. A more permanent feature of our body image relates to what we count as part of our body (and hence belonging to us), and what we don't.

Allport (1955) gives two rather dramatic examples of how intimate our bodily sense is, and just where we draw the boundaries between 'me' and 'not me'.

ASK YOURSELF...

- Imagine swallowing your saliva – or actually do it. Now imagine spitting it into a cup and drinking it. Clearly, once we've spat out our saliva, we've disowned it – it no longer belongs to us!
- Imagine sucking blood from a cut on your finger (something we do quite automatically). Now imagine sucking the blood from a plaster on your finger! Again, once it's soaked into the plaster it has ceased to be part of ourselves.
- Can you think of any exceptions to this 'rule'?



Simon Weston, survivor – and casualty – of the Falklands War in 1982

We might feel we've lost part of ourselves when we have very long hair cut off, and lovers often keep locks of each other's hair as constant (and tangible) reminders that the other exists. Whenever our body changes in some way, so our body image changes. In extreme cases (such as losing a limb, being scarred, or having cosmetic surgery), we'd expect a correspondingly dramatic change in body image.

Self-esteem

While the self-image is essentially *descriptive,* self-esteem (or *self-regard*) is essentially *evaluative.* It refers to how much we like and approve of ourselves, how worthy a person we think we are. Coopersmith (1967) defined it as 'a personal judgement of worthiness, that is expressed in the attitudes the individual holds towards himself'.

How much we like or value ourselves can be an overall judgement, or it can relate to specific areas of our lives. For example, we can have a generally high opinion of ourselves and yet not like certain of our characteristics or attributes (such as our curly hair when we want it straight, or our lack of assertiveness when we want to be more assertive). Conversely, it may be very difficult to have high overall esteem if we're very badly disfigured, or are desperately shy.

Box 33.1 Different domains of self-esteem (Harter, 1999)

Harter believes that there are five separate areas/domains involved in assessing children's self-esteem.

1. **Scholastic competence:** how able the child considers him/herself at school work.
2. **Athletic competence:** how able the child considers him/herself at sport.
3. **Social acceptance:** whether the child feels popular with his/her peers.
4. **Physical appearance:** how good-looking the child believes him/herself to be.
5. **Behavioural conduct:** to what extent the child considers his/her general behaviour to be acceptable to others.

These five domains are combined to make a single assessment tool, the *Self-Perception Profile for Children* (S-PPC). A *global self-worth scale* is included, which asks how much children like themselves as people. Profiles can be consistently high, consistently low, or can vary across domains.

ASK YOURSELF...

- How many, and which, of these domains apply to adolescents and adults?
- Do more domains have to be added as we get older? If so, what might they be?

Our self-esteem can be regarded as how we evaluate our self-image, that is, how much we like the kind of person we think we are. Clearly, certain characteristics or abilities have a greater value in society generally, and so are likely to influence our self-esteem accordingly (for example, being physically attractive as opposed to unattractive: see Chapter 28). The value attached to particular characteristics will also depend on culture, gender, age and social background (see Critical Discussion 33.2, page 572).

CRITICAL DISCUSSION 33.1 Is self-esteem all it's cracked up to be?

- According to Fiske (2004), the benefits of high self-esteem are real, but they can be taken too far:

  ... Nowadays, self-esteem is all the rage, as attested by the self-help section of the nearest bookstore: Self-esteem is the great cure-all, the great panacea for the problems that ail us ...

- But Baumeister (1998) has begun to debunk this myth – in the context of violence and aggression. In a review of the research literature, Baumeister *et al.* (1996) concluded that some of the most aggressive people have incredibly *high* self-esteem. Violence becomes more likely when another person or situation contradicts a person's highly favourable view of oneself.
- Such individuals' self-esteem is also *fragile* and *inflated*. It's this combination that makes them so easily threatened. Violence and aggression may be an attempt at self-protection. Murder, rape, assault and domestic violence are often associated with threats to honour and feelings of male superiority.

Ideal self

Self-esteem is also partly determined by how much the self-image differs from the *ideal self*. If our self-image is the kind of person we think we are, then our ideal self (*ego-ideal* or *idealised self-image*) is the kind of person we'd *like to be*. This can vary in extent and degree. We may want to be different in certain aspects, or we may want to be a totally different person. (We may even wish we were someone else!) Generally, the greater the gap between our self-image and our ideal self, the lower our self-esteem (see Rogers' *self theory:* Chapter 42).

Self-schemata

We not only represent and store information about other people, we do so about ourselves – but in a more complex and varied way. This information about the self constitutes the self-concept. We tend to have very clear conceptions of ourselves (*self-schemata*) on some dimensions (such as those that are very important to us), but not others. For example, if you think of yourself as athletic, as



Jocelyne Wildenstein (the 'Cat Woman') has had several plastic surgery procedures to make herself look like a cat

definitely not unathletic, and being athletic is important to you, then you are *self-schematic* on that dimension (it is part of your self-concept: Hogg & Vaughan, 1995).

ASK YOURSELF...
- What are you self-schematic on?

Most people have a complex self-concept with a relatively large number of self-schemata. These include an array of *possible* selves, *future-oriented* schemata of what we'd like to become (ideal self) (Markus & Nurius, 1986). Visions of future possible selves may influence how we make important life decisions, such as career choice.

The idea of *multiple selves* raises the question of whether there's any one self that's more real or authentic than the others. For example, perhaps we feel most real (most 'ourselves') when with someone we believe sees us as we wish to be seen. Personality theorists tend to assume that the person has a single, unitary self. This is implied by the fact that typical instructions at the top of a personality questionnaire don't specify which self the respondent should describe (Hampson, 1995). By contrast, social psychologists recognise the possibility that the self refers to a complex set of perceptions, composed of a number of schemata relating both to what we're like and how we *could be.*

THEORIES OF SELF

James' theory: self-as-subject/self-as-object

It was James (1890) who first made the distinction between *self-as-subject or knower* ('I') and *self-as-object or known* ('me'). The 'I' represents the principal form of the self, lying at the centre of our state (or 'stream') of consciousness. But we have as many selves as we have social relationships: the self is *multifaceted.* This is consistent with the widely shared view that we modify our behaviour to some extent depending on whom we're with: different others bring out different aspects of our personality (Hampson, 1995).

Goffman's dramaturgical theory

James' view of multiple selves is also consistent with Goffman's (1971) account of *self-presentation,* which he defined as the creation and maintenance of a *public self.* By analogy with the theatre, each participant in a social interaction is engaged in a performance designed as much for its effect on the audience as it is for honest and open expression of the self. Indeed, according to this *dramaturgical approach,* personality is equated with the various roles the person plays in life.

So, for Goffman (1971), the only true self is a public one. In discussing the link between self and self-presentation, he says:

> A correctly staged and performed scene leads the audience to impute a self to a performed character, but this impression – this self – is a *product* of a scene that comes off and is not a *cause* of it. The self shouldn't be regarded as an internal, organic thing, but rather as the dramatic effect of a person's public presentation.

James' idea of multiple selves goes much further than this, by suggesting that different personalities are constructed in the context of every relationship one has (Hampson, 1995).

ASK YOURSELF...
- Do you agree with James or Goffman, or do you believe there is just one 'self', that remains constant regardless of whom we're interacting with or the context of the interaction?

Cooley's theory: the looking-glass self

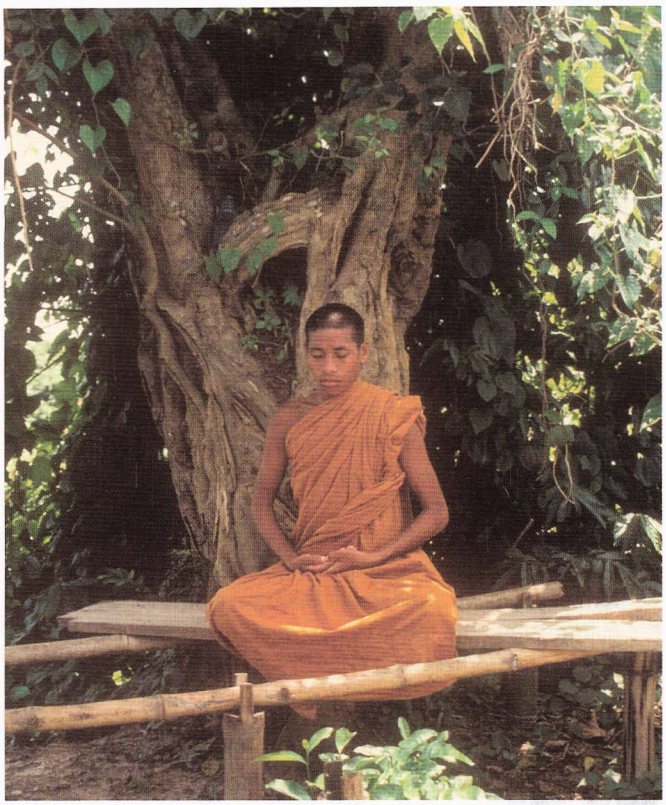
According to Cooley's (1902) *theory of the looking-glass self,* the self is reflected in the reactions of other people, who are the 'looking-glass' for oneself. That is, in order to understand what we're like, we need to see how others see us, and this is how children gradually build up impressions of what they're like. We receive reflections of judgements and evaluations of our behaviour and appearance, which produce some form of self-feeling (such as pride or shame).

Consistent with the notion of multiple selves, Cooley claims that the looking-glass isn't a 'mere mechanical reflection', because it will differ depending on whose view we take. The individual and society are opposite sides of the same coin (Denzin, 1995).

Mead's symbolic interactionism

Symbolic interactionism is mainly associated with Mead (1934), who was influenced by the earlier theories of James and Cooley. According to symbolic interactionism, human beings act towards things in terms of their *meanings.* People exist in a *symbolic* as well as a physical environment: the importance of a social interaction is derived from the meaning it holds for the participants. The 'interaction' refers specifically to the fact that people communicate with each other, which provides the opportunity for meanings to be learned. Because we share a common language and have the ability for symbolic thought, we can (at least in principle) look at the world from the point of view of other perceivers – that is, *take the role of the other.* According to Mead, this is essentially the process by which the self develops.

Mead turned James and Cooley on their heads. The self isn't mentalistic (something privately going on inside the individual) but, like mind, is a cognitive process lodged in the *ongoing social world.* However, like Cooley, he saw self and society as two terms in a reciprocal



Buddhist monk in meditation

process of interaction (Denzin, 1995). Knowledge of self and others develops simultaneously, both being dependent on social interaction: self and society represent a common whole and neither can exist without the other.

According to Mead, the human being is an organism with a self. This converts him into a special kind of actor, transforms his relation to the world, and gives his actions a unique character. The human being is an object to himself, that is, he can perceive himself, have conceptions about himself, communicate with himself and so on. In sum, he can interact with himself, and this self-interaction is a great influence upon his transactions with the world in general, and with other people in particular.

Self-interaction is a *reflexive process,* which is Mead's way of making the 'I'/'me' distinction. The experiencing 'I' cannot be an object, it cannot itself be experienced, since it's the very act of experiencing. What we experience and interact with is our 'me'.

As important as language is in (self-)interaction, the *key process* by which we develop a concept of self is *role-taking.* By placing ourselves in the position of others, we can look back on ourselves. The idea of self can develop only if the individual can 'get outside himself (experientially) in such a way as to become an object to himself' (Mead, 1934); that is, to see ourselves from the standpoint of others.

Box 33.2 Mead's developmental theory of the self

- Initially, the child thinks about his conduct as 'good or bad only as he reacts to his own acts in the remembered words of his parents'. 'Me' at this stage is a combination of the child's memory of his own actions and the kind of reaction they received.
- In the next stage, the child's pretend play, in particular 'playing at mummies and daddies' or 'doctors or nurses', helps the child to understand and incorporate adult attitudes and behaviour. Here, the child isn't merely imitating but also 'calls out in himself the same response as he calls out in the other'. For example, he's being the child and the parent and, as the parent, is responding to himself as the child. So, in playing with a doll, the child 'responds in tone of voice and in attitudes as his parents respond to his cries and chortles'.
- Play is distinguished from games, which involve rules: 'The child must not only take the role of the other, as he does in the play, but he must assume the various roles of all the participants in the game, and govern his action accordingly...'. Games are a later development than play.
- In this way, the child acquires a variety of social viewpoints or 'perspectives' (mother, father, nurse, doctor), which are then used to accompany, direct and evaluate his own behaviour. This is how the *socialised part of the self* (Mead's 'me') expands and develops.
- At first, these viewpoints or perspectives are based upon specific adults. But in time, the child comes to react to himself and his behaviour from the viewpoint of a 'typical mother', a 'typical nurse' or 'people in general' (the *generalised other*). The incorporation of the generalised other marks the final, qualitative change in the 'me'. 'It is this generalised other in his experience which provides him with a self.'
- Grammatically, our 'me' is third person (like 'she' or 'he'), and it's an image of self seen from the perspective of a judgemental, non-participant observer. By its very nature, 'me' is social, because it grows out of this role-playing, whereby the child is being the other person.

(Based on Mead, 1934)

Social constructionist approaches

Influenced by Mead, many sociologists and social psychologists see the role of language as fundamental to the construction and maintenance of the self. What we say about ourselves often depends on who's listening. In selecting what to say and not to say, we're actively *constructing* a self in relation to another person: we're constantly 'making a self'. The self is not a static, internal entity but a constantly changing *process* (Petkova, 1995).

According to Harré (1985, 1989), our understanding and experiences of ourselves as human beings, our subjective experiences of selfhood, are laid down by the

beliefs about being a person that are implicit in our language. The structure of our language implies certain assumptions/beliefs about human nature, which we live out in our daily interactions with others. For example, the words 'I' and 'me' mislead us into believing that each of us is represented by a coherent, unified self which operates mechanisms and processes (the subject matter of psychology) that are responsible for our actions. But 'self', 'ego', 'mind' and so on don't refer to anything that exists objectively in the world: they're *hypothetical constructs* which perform the very important function of helping us to organise and structure our world (Burr, 1995).

According to Harré (1995c; 1999), what 'I' actually does is specify a location for the acts performed by a speaker. It draws attention to the body of one particular speaker who occupies a unique location, both physically and socially. It also commits that individual to the *consequences* of his/her utterance. We use words such as 'I' in conversation to perform actions in a *moral universe:*

> ... 'I' ... is a form of life, a moral community that has been presupposed by the uses of the first person, not a kind of hidden inner cognitive engine ... (Harré, 1989)

Similarly, Potter & Wetherell (1987) argue that the very experience of being a person, the kind of mental life one can have, perhaps even how we experience sensory information, are dependent on the particular representations of selfhood, the particular ways of accounting for/talking about ourselves, that are available in our culture. These 'stories' or accounts, whose meaning is shared by members of a culture, are called *discourses.* Since these differ from culture to culture, it follows that members of different cultures will experience being human ('selves') in different ways.

CRITICAL DISCUSSION 33.2: The self-concept as a cultural phenomenon

- In Maori culture, the person is invested with a particular kind of power (*mana*), given by the gods in accordance with the person's family status and birth circumstances. This is what enables the person to be effective, whether in battle or everyday dealings with others.
- But this power isn't a stable resource, and can be increased or decreased by the person's day-to-day conduct. For example, it could be reduced by forgetting a ritual observance, or committing some misdemeanour.
- People's social standing, and successes and failures, are seen as dependent on external forces, not internal states (such as personality or level of motivation). In fact, *mana* is only one of these external forces which inhabit the individual.
- People living in such a culture would necessarily experience themselves quite differently from what people in western culture are used to. Instead of representing themselves as the centre and origin of their actions, which is crucial to the western concept of the self:

  > *The individual Maori does not own experiences such as the emotions of fear, anger, love, grief; rather they are visitations governed by the unseen world of powers and forces ... (Potter & Wetherell, 1987)*

- According to Moscovici (1985), 'the individual' is the greatest invention of modern times. Only recently has the idea of the autonomous, self-regulating, free-standing individual become dominant, and this has fundamental implications for the debate about free will and determinism (see Chapter 49).
- Smith & Bond (1998) argue that we need to distinguish between *independent* and *interdependent* selves: the former is what's stressed in western, *individualist* cultures, and the latter by non-western, *collectivist* cultures (see Chapter 47).

An evaluation of social constructionist approaches

- According to Burr (2003):

  > The idea of self does not dictate any particular content to that concept. The fact that our western concept of self contains such things as personality, individuality and agency can be accounted for, in social constructionist terms, by prevailing discourses. But the fact that we have a concept of self at all cannot ...

  In other words, Burr seems to be saying that the *concept* of self is *universal.*

- According to Willig (2001), discursive psychology's rejection of subjectivity, self-awareness, thought, intentions and sense of life history (in other words, 'self') has left a gaping hole in social constructionist psychology. If 'self' is merely a *linguistic phenomenon,* fragmented and distributed across discourses and interactions, social constructionists haven't replaced it with anything that performs its *explanatory function.*
- Burr (2003) believes that 'personality', 'attitudes' and other 'contents' of the person can be dispensed with, but the concept of self can be reclaimed by social constructionist psychologists without compromising their theoretical assumptions. Unlike mainstream psychology's 'humanistic' self, the social constructionist self isn't fixed and doesn't have to be seen as causing anything:

  > ... human beings always will be conscious of selfhood. The only thing this is contingent upon is social interaction. Human beings become persons when they become engaged in social encounters, and this makes some form of selfhood

possible and even inevitable. My self-concept arises out of reflection, and is present during all social interactions, in effect constituting a third 'other' that exerts the same pull on my conduct as real interactants ... (Burr, 2003)

◎ As Harré acknowledges (see above), the self grounds moral choices and agency. Without it, it's hard to see how we can avoid regarding all actors as interchangeable. Where do moral choices come from? According to Burr (2003), Mead's *generalised other* is crucial here: the other is so much part of my make-up that my experience isn't differentiated from the other's. We intuitively feel the consequences of our actions, because we're not differentiated from the other.

FACTORS INFLUENCING THE DEVELOPMENT OF THE SELF-CONCEPT

Much of the research into factors that influence the self-concept can be understood in relation to the symbolic interactionist position. But the importance of these factors extends beyond childhood – our self-concept is constantly being revised. The most significant 'change' is probably the time when it's first being formed.

Argyle (1983) identifies four major influences:

1. the reaction of others
2. comparison with others
3. social roles
4. identification (see Chapters 35 and 36).

The reaction of others

We've already seen in the theories of Cooley and Mead how central the reactions of others are in the formulation of our self-concept. Any attempt to explain how we come to be what we are, and how we change, involves us in the question of what kind of evidence we use. Kelly (1955), like Cooley and Mead, believes that we derive our pictures of ourselves through what we learn of other people's pictures of us (see Chapter 42). So, the central evidence is the reaction of others to us, both what they say of us and the implications of their behaviour towards us. We filter others' views of us through our views of them. We build up continuous and changing pictures of ourselves out of our interaction with others.

Guthrie (1938) tells the famous story of a dull and unattractive female student. Some of her classmates decided to play a trick on her by pretending she was the most desirable girl in the college, and drawing lots to decide who would take her out first, second and so on. By the fifth or sixth date, she was no longer regarded as dull and unattractive.

ASK YOURSELF...
- Try to explain this change in the student.



Teachers – major new significant others for younger children

By being treated as attractive she had, in a sense, *become* attractive (perhaps by wearing different clothes and smiling more), and her self-image had clearly changed. For the boys who dated her later, it was no longer a chore! 'Before the year was over, she had developed an easy manner and a confident assumption that she was popular' (Guthrie, 1938).

Preschool children are extremely concerned with how adults view them, and few things are more relevant than the reactions to them of *significant others* (parents, older siblings, and other people whose opinions the child values). Strictly speaking, it's the child's *perception* of others' reactions that makes such an important contribution to how the child comes to perceive itself. After all, the child has no frame of reference for evaluating parental reactions: parents are all-powerful figures, and what they say is 'fact'. If a child is consistently told how beautiful she is, she'll come to believe it (it will become part of her self-image). Similarly, if a child is repeatedly told how stupid or clumsy he is, this too will become accepted as the 'truth', and the child will tend to act accordingly.

The first child is likely to develop high self-esteem and the second low self-esteem. Argyle explains this in terms of *introjection* (a process very similar to identification), whereby we come to incorporate into our own personality the perceptions, attitudes and reactions to ourselves of our parents. It's through others' reactions that the child learns its *conditions of worth,* that is, which behaviours will produce *positive regard* and which will not (Rogers, 1959: see Chapter 42).

When the child starts school, the number and variety of significant others increase to include teachers and peers. At the same time, the child's self-image is becoming more differentiated, and significant others then become important in relation to different parts of the self-image. For example, the teacher is important as far as the child's

academic ability is concerned, parents as far as how loveable the child is, and so on.

How others' reactions influence self-esteem

KEY STUDY 33.1 The development of self-esteem (Coopersmith, 1967)

- From an original sample of hundreds of 9- and 10-year-old white, middle-class boys, Coopersmith selected five groups (17 per group), including those who scored high, and those who scored low, on each of three measures of self-esteem:
  - a his self-esteem inventory
  - b teachers' evaluations of the boys' reactions to failure, self-confidence in new situations, and so on
  - c scores on the thematic apperception test (TAT) (see Chapter 9, page 153).
- The *high-esteem* boys were confident about their own perceptions and judgements, expected to succeed at new tasks and to influence others, and readily expressed their opinions. They were also doing better in school and were more often chosen as friends by other children than the low-esteem boys. They had a realistic view of themselves and their abilities, weren't unduly worried by criticism, and enjoyed participating in things.
- The *low-esteem* boys were a 'sad little group', isolated, fearful, reluctant to join in, self-conscious, oversensitive to criticism, consistently underrating themselves, tending to underachieve in class, and preoccupied with their own problems.
- But there were no significant differences in intelligence or physical attractiveness between the two groups, who were all free from any obvious emotional disturbance.
- Based on a questionnaire and in-depth interviews with the mothers, plus interviews with the boys about their parents' childrearing methods, Coopersmith found significant differences between the two sets of parents.
- The optimum conditions for the development of high self-esteem seem to involve a combination of firm enforcement of limits on the child's behaviour, plus a good deal of acceptance of the child's autonomy and freedom within those limits. Firm management helps the child to develop firm inner controls: a predictable and structured social environment helps the child to deal effectively with the environment, and hence to feel 'in control' of the world (rather than controlled by it).
- Coopersmith followed the boys through into adulthood, and found that the high-esteem boys consistently outperformed the low-esteem boys and proved more successful – educationally and vocationally.

ASK YOURSELF...

- Can you think of any limitations of Coopersmith's study that would make it difficult to generalise the results?

An evaluation of Coopersmith's study

- Coopersmith's data are only *correlational,* so we cannot be sure that how the boys were raised was actually responsible for their level of self-esteem. Remember, too, that the boys were white middle-class and therefore not representative of the American population as a whole – what about working-class, black and female children?
- Generally, girls have lower self-esteem than boys. For example, when paired with boys in problem-solving tasks, they sometimes artificially depress their performance so as not to outshine their male partners (boys very rarely do this!). Some girls seem to feel uncomfortable in the superior role, as if this is inconsistent with their 'true' position in life. They also tend to rate themselves less highly than boys on written tests of self-esteem, set themselves lower goals in life, and are more inclined to underestimate their abilities than boys, even in primary school, where in reading and language skills they often tend to surpass boys (see Chapter 36).

Box 33.3 The schizophrenic self

- In contrast with the parents of high-esteem boys in Coopersmith's study is the study of interaction between parents and their schizophrenic children.
- These parents tend to deny *communicative support* to the child, and often fail to respond to the child's statements and demands for recognition of its opinions. When the parents do communicate with the child, it's often in the form of an interruption or an intrusion, rather than a response to the child. In fact, they respond selectively to those of the child's utterances that they themselves have initiated, rather than those initiated by the child.
- Laing (1970) suggests that these kinds of communication patterns within the family make the development of *ego boundaries* in the child very difficult – that is, there's a confusion between *self* and *not-self* (me and not-me). This impaired autonomy of the self and appreciation of external reality are often found to be fundamental characteristics of schizophrenic adolescents and adults (see Chapter 44).

Comparison with others

ASK YOURSELF...

- Can you think of any examples of where comparison with others (either made by others or yourself) has affected your self-image/self-esteem (either favourably or unfavourably)?

According to Bannister & Agnew (1976), the personal construct of 'self' is intrinsically *bipolar* – that is, having a

concept of self implies a concept of not-self. (This is similar to Cooley and Mead's view that self and society are really two sides of a coin.) So, one way in which we come to form pictures of what we're like is to see how we compare with others. Indeed, certain components of self-image are meaningful only through comparison with others. For example, 'tall' and 'fat' aren't absolute characteristics (like, say, 'blue-eyed'): we're tall or fat only in relation to others who are shorter or thinner than us. This is true of many other characteristics, including intelligence (see Chapter 41).

Parents and other adults often react to children by comparing them with other children (such as siblings: see Chapter 32). If a child is told repeatedly that she's 'less clever than [her] big sister', she'll come to incorporate this into her self-image, and will probably have lower self-esteem as a result. This could adversely affect her academic performance, so that she doesn't achieve in line with her true ability. A child of above average intelligence who's grown up in the shadow of a brilliant brother or sister may be less successful academically than an average or even below average child who's not had to face these unfavourable comparisons.

ASK YOURSELF...

- Do you think it's possible for the converse to be true – in other words, can one's view of self affect how we compare ourselves with others?

According to Tesser (2004), recent research has demonstrated exactly this effect. For example, the poorer our performance in, say, athletics, the more charitable we are in evaluating others' athletic performance. If I do poorly, then others who do poorly are 'OK'; if I do well, then people who do poorly are rated down. Under some conditions, when we're outperformed by others, we *don't* downgrade our view of self but, instead, upgrade their performance (Alicke *et al.*, 1997). It's less threatening to be outperformed by a 'genius' than someone of normal/average ability (they're 'out of our league').

Social roles

As we noted earlier, social roles are what people commonly regard as part of 'who they are'. Kuhn (1960) asked seven-year-olds and undergraduate students to give 20 different answers to the question, 'Who am I?' The seven-year-olds gave an average of five answers relating to roles, while the undergraduates gave an average of ten. As we get older, we incorporate more and more roles into our self-image, reflecting the increasing number and variety of roles we actually take on. The preschooler is a son or daughter, perhaps a brother or sister, has other familial roles, and may also be a friend to another child. But the number and range of roles are limited compared with those of the older child or adult.

DEVELOPMENTAL CHANGES IN THE SELF-CONCEPT

How do we get to know ourselves?

Achieving identity, in the sense of acquiring a set of beliefs about the self (a *self-schema*), is one of the central developmental tasks of a social being (Lewis, 1990). It progresses through several levels of complexity, and continues to develop through the lifespan (see Chapters 38 and 39).

During the first few months, the baby gradually distinguishes itself from its environment and from other people, and develops a sense of *continuity through time* (the *existential self*). But at this stage, the infant's self-knowledge is comparable to that of other species (such as monkeys). What makes human self-knowledge distinctive is becoming aware that we have it – we're conscious of our existence and uniqueness (Buss, 1992).

According to Maccoby (1980), babies are able to distinguish between themselves and others on two counts:

1. their own fingers hurt when bitten (but they don't have any such sensations when they're biting their rattle or their mother's fingers)
2. probably quite early in life, they begin to associate feelings from their own body movements with the sight of their own limbs and the sounds of their own cries. These sense impressions are bound together into a cluster that defines the *bodily self*, so this is probably the first aspect of the self-concept to develop.



A baby acquiring its bodily self

Other aspects of the self-concept develop by degrees, but there seem to be fairly clearly defined stages of development. Young children may know their own names, and understand the limits of their own bodies, and yet be unable to think about themselves as coherent entities. So, self-awareness/self-consciousness develops very gradually.

According to Piaget, an awareness of self comes through the gradual process of *adaptation to the environment* (see Chapter 34). As the child explores objects and accommodates to them (thus developing new *sensorimotor schemas*), it simultaneously discovers aspects of its self. For example, trying to put a large block into its mouth and finding that it won't fit is a lesson in selfhood, as well as a lesson about the world of objects.

Self-recognition

One way in which the development of bodily self has been studied is through *self-recognition*, and this involves more than just a simple discrimination of bodily features. To determine that the person in a photograph or a film or reflected in a mirror is oneself, certain knowledge seems to be necessary:

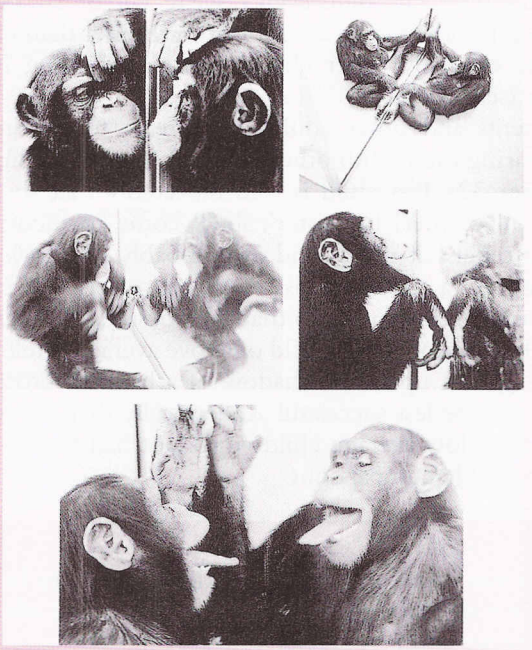
- at least a rudimentary knowledge of oneself as continuous through time (necessary for recognising ourselves in photographs or movies) and space (necessary for recognising ourselves in mirrors), and
- knowledge of particular features (what we look like).

Although other kinds of self-recognition are possible (e.g. one's voice or feelings), only *visual* self-recognition has been studied extensively, both in humans and non-humans.

Many non-human animals (including fish, birds, chickens and elephants) react to their mirror-images as if they were other animals: they don't seem to recognise them as their own reflections at all. But self-recognition has been observed in the higher primates – chimpanzees and other great apes.

KEY STUDY 33.2 Mirror, mirror ... (Gallup, 1977)

- Gallup, working with preadolescent, wild-born chimps, placed a full-length mirror on the wall of each animal's cage. At first, they reacted as if other chimps had appeared – they threatened, vocalised, or made conciliatory gestures. But this quickly faded out, and by the end of three days had almost disappeared. They then used their images to explore themselves. For example, they'd pick up food and place it on their faces, which couldn't be seen without the mirrors (see photographs opposite).
- After ten days' exposure, each chimp was anaesthetised and a bright red spot was painted on the uppermost part of one eyebrow ridge, and a second spot on the top of the opposite ear, using an odourless, non-irritating dye.
- When the chimp had recovered from the anaesthetic, it was returned to its cage, from which the mirror had been removed, and it was observed to see how often it touched the marked parts of its body. The mirror was then replaced, and each chimp began to explore the marked spots around 25 times more often than it had done before.
- The procedure was repeated with chimps that had never seen themselves in the mirror, and they reacted to the mirror-image as if it were another chimp (they didn't touch the spots). So, the first group had apparently learned to recognise themselves.
- Lower primates (monkeys, gibbons, and baboons) are unable to learn to recognise their mirror-images.



Chimpanzees learn to use mirrors to explore parts of their bodies they cannot usually see

A number of researchers (e.g. Lewis & Brooks-Gunn, 1979) have used modified forms of Gallup's technique with 6–24-month-old children. The mother applies a dot of rouge to the child's nose (while pretending to wipe its face), and the child is observed to see how often it touches its nose. It's then placed in front of a mirror, and again the number of times it touches its nose is recorded. At about 18 months, there's a significant change. While touching the dot was never seen before 15 months, between 15 and 18 months, 5–25 per cent of infants touched it, and 75 per cent of the 18–24-month-olds did.

In order to use the mirror-image to touch the dot on its nose, the baby must also have built up a schema of how its face should look in the mirror before (otherwise, it wouldn't notice the discrepancy created by the dot). This doesn't develop before about 18 months. This is also about the time when, according to Piaget, *object permanence* is completed, so object permanence would seem to be a necessary condition for the development of self-recognition (see Chapter 34).

Interpreting Gallup's findings

It's generally agreed that passing the mirror test is strong evidence that a chimp has a self-concept, and that only chimps, orang-utans and humans consistently pass it.

However, Gallup (1998) infers much more than this. He claims that:

> ... not only are some animals aware of themselves but ... such self-awareness enables these animals to infer the mental states of others. In other words, species that pass the mirror test are also able to sympathise, empathise and attribute intent and emotions in others – abilities that some might consider the exclusive domain of humans.

He believes that self-awareness or self-consciousness is the expression of some underlying process that allows organisms to use their experience as a means of modelling the experience of others. The best support for this *mind-reading hypothesis* (MRH) comes from mirror studies involving human infants and young children (see above). Gallup's research also points to the *right prefrontal cortex* (see Chapter 4) as the brain area that mediates self-awareness and mental states (such as deception and gratitude) – and this is the brain region that grows most rapidly between 18 and 34 months.

As additional support for his MRH, Gallup cites studies by Povinelli and his colleagues involving chimps. These studies are often taken to show that chimps have a 'theory of mind' (see Chapter 40). Ironically, Povinelli (1998) himself disagrees with Gallup's MRH. While agreeing that passing the mirror test indicates that chimps possess a self-concept, he disagrees that this means that they also possess the deep psychological understanding of behaviour that seems so characteristic of humans.

If chimps *don't* genuinely reason about mental states, what can we say about their understanding of self based on the mirror test? Povinelli has tried to answer this by shifting his attention from chimps to two-, three-, and four-year-old children.

KEY STUDY 33.3 Stickers, lies and videotape (Povinelli, 1998)

- In a series of experiments, children were videotaped while they played an unusual game. The experimenter placed a large, brightly coloured sticker secretly on top of the child's head. Three minutes later, they were shown either (a) a live video image of themselves, or (b) a recording made several minutes earlier, which clearly depicted the experimenter placing the sticker on the child's head.
- Two- and three-year-olds responded very differently, depending on which video they saw. With the live image (equivalent to seeing themselves in a mirror), most reached up and removed the stickers from their heads. But with the recording, only about one third did so. However, this wasn't because they failed to notice the stickers (when the experimenter drew their attention to them and asked 'What is that?', most gave the correct answer).
- They also 'recognised' themselves in the recording – they all confidently responded with 'Me' and stated their name when asked 'Who is that?'. But this reaction didn't seem to go beyond a recognition of facial and bodily features. When asked 'Where is that sticker?', they often referred to the 'other' child (e.g. 'It's on her/his head'), as if they were trying to say 'Yes, that looks like me, but that's not *me* – she's not doing what I'm doing right now'. One three-year-old said 'It's Jennifer' (her name), then hurriedly added 'but why is she wearing my shirt?'
- By about four, a significant majority of the children began to pass the delayed self-recognition test. Most four- and five-year-olds confidently reached up to remove the stickers after watching the delayed video images of themselves. They no longer referred to 'him/her' or their proper names.

According to Povinelli, these results are consistent with the view that genuine *autobiographical memory* (AM) appears to emerge in children between three-and-a-half and four-and-a-half (not the two-year mark favoured by Gallup). AM implies understanding that memories constitute a genuine 'past' – a history of the self leading up to the here-and-now (see Chapter 17).

It also suggests that self-recognition in chimps – and human toddlers – is based on recognition of the self's *behaviour,* not the self's psychological states. When chimps and orang-utans see themselves in a mirror, Povinelli (1998) believes they:

> ... form an equivalence relation between the actions they see in the mirror and their own behaviour. Every time they move, the mirror image moves with them. They conclude that everything that is true for the mirror image is also true for their own bodies, and vice versa. Thus, these apes can pass the mirror test by correlating coloured marks on the mirror images with marks on their own bodies. But the ape does not conclude, 'That's me!'. Rather the animal concludes, 'That's the same as me!'

In short, chimps possess explicit mental representations of the positions and movements of their own bodies, which Povinelli calls the *kinaesthetic self-concept* (see Chapter 5).

Gallup's MRH relates to what Dunbar (2004) calls *second order intentionality* (the capacity to reflect on the contents of *someone else's mind*). His research suggests that humans are limited to *fifth order intentionality* ('I suppose [1] that you believe [2] that I want [3] you to think [4] that I intend [5] ...'). Chimps (and perhaps other great apes) may be capable of *second order,* and monkeys stop at *first order* (along with most mammals and birds). Dunbar believes that these capacities are a linear function of the relative size of the frontal lobe: a large neocortex in general, and frontal lobes in particular, is a 'primate speciality'. However, mind-reading *isn't* a specialised primate or even human capacity: there's only a *quantitative*

difference between species in the number of orders of intentionality they can travel.

Self-definition

Piaget, Mead, and many others have pointed to the importance of language in consolidating the early development of self-awareness, by providing labels which permit distinctions between self and not-self ('I', 'you', 'me', 'it'). The toddler can then use these labels to communicate notions of selfhood to others. One important kind of label is the child's *name*.

Names aren't usually chosen arbitrarily – either the parents particularly like the name, or they want to name the child after a relative or famous person. Names aren't neutral labels in terms of how people respond to them and what they associate with them.



Gwyneth Paltrow with baby Apple

Indeed, they can be used as the basis for *stereotyping* (see Chapter 22). Jahoda (1954) described the naming practices of the Ashanti tribe of West Africa. Children born on different days of the week are given names accordingly, because of the belief that they have different personalities. Police records showed that among juvenile delinquents, there was a very low percentage of boys born on Monday (believed to have quiet and calm personalities), but a very high rate of Wednesday-born boys (thought to be naturally aggressive).

ASK YOURSELF...

- How might the boys' names have contributed to these statistics?

These findings can be explained in terms of the *self-fulfilling prophecy*. It's reasonable to believe that these Ashanti boys were treated in a way consistent with the name given to them, and that, as a result, they 'became' what their name indicated they were 'really' like. In English-speaking countries, days of the week (e.g. Tuesday) and months of the year (April, May and June) are used as names, and they have associations which may influence others' reactions (for example, 'Monday's child is fair of face, Tuesday's child is full of grace ...').

When children refer to themselves as 'I' (or 'me') and others as 'you', they're having to reverse the labels that are normally used to refer to them by others ('you', 'he', 'she'). Also, of course, they hear others refer to themselves as 'I' and not as 'you', 'he', or 'she'. This is a problem of *shifting reference*. Despite this, most children don't invert 'I' and 'you'. However, two interesting exceptions are autistic and blind children, who often use 'I' for others and 'you' for self (see Chapter 40). This may be associated with the abnormal interactions and relationships these children experience which, in turn, would further support Cooley and Mead.

The psychological self

Maccoby (1980) asks what children mean when they refer to themselves as 'I' or 'me'. Are they referring to anything more than a physical entity enclosed by an envelope of skin?

KEY STUDY 33.4 There's more to children than meets the eye (Flavell *et al.*, 1978)

- Flavell *et al.* (1978) investigated development of the psychological self in two-and-a-half to five-year-olds.
- In one study, a doll was placed on the table in front of the child, and it was explained that dolls are like people in some ways – they have arms, legs, hands, and so on (which were pointed to). Then the child was asked how dolls are different from people, whether they know their names and think about things, and so on. Most children said a doll doesn't know its name and cannot think about things, but people can.
- They were then asked, 'Where is the part of you that knows your name and thinks about things?' and 'Where do you do your thinking and knowing?', and 14 out of 22 children gave fairly clear localisation for the thinking self, namely 'in their heads', while others found it very difficult. The experimenter then looked directly into the child's eyes and asked, 'Can I see you thinking in there?' Most children thought not.

These answers suggest that by three-and-a-half to four years, a child has a rudimentary concept of a private, thinking self that's not visible even to someone looking directly into its eyes. The child can distinguish this from the bodily self, which it knows is visible to others. In

other words, by about age four, children begin to develop a *theory of mind,* the awareness that they – and other people – have mental processes (e.g. Leekam, 1993; Shatz, 1994; Wellman, 1990). However, one group failing to develop a theory of mind is autistic children (see Chapter 40).

The categorical self

Age and *gender* are both parts of the central core of the self-image. They represent two of the categories regarding the self which are also used to perceive and interpret the behaviour of others.

Age is probably the first social category to be acquired by the child (and is so even before a concept of number develops). Lewis & Brooks-Gunn (1979) found that six- to 12-month-olds can distinguish between photographs, slides and papier-mâché heads of adults and babies. By 12 months, they prefer interacting with unfamiliar babies to unfamiliar adults. Also, as soon as they've acquired labels like 'mummy' and 'daddy' and 'baby', they almost never make age-related mistakes.

Before age seven, children tend to define the self in *physical* terms – hair colour, height, favourite activities and possessions. Inner, psychological experiences and characteristics aren't described as being distinct from overt behaviour and external, physical characteristics. During middle childhood through to adolescence, self-descriptions now include many more references to internal, psychological characteristics, such as competencies, knowledge, emotions, values and personality traits (Damon and Hart, 1988). However, Damon and Hart also report important cultural differences in how the self-concept develops (see Critical Discussion 33.2).

School highlights others' expectations about how the self should develop. It also provides a social context in which new goals are set and comparisons with others (peers) are prompted. This makes evaluation of the self all the more important (Durkin, 1995). This comparison becomes more important still during adolescence (see Chapter 37).

CHAPTER SUMMARY

- An important distinction is that between **consciousness** and self-**consciousness/awareness**. Self-awareness allows us to see ourselves as others see us.
- Our **self-concept** refers to our perception of our personality, and comprises the **self-image** (which includes **body image/bodily self**), **self-esteem**, and **ideal self.** It can also be defined in terms of a complex set of **self-schemata**, which themselves include an array of possible selves.
- A major theoretical approach to the self is **symbolic interactionism**, associated mainly with Mead, who was influenced by James's **'I'/'me' distinction** and by Cooley's theory of the **looking-glass self**.
- Mead denied that the self is mentalistic, seeing it as a **process of social interaction**. It develops through **role-taking**, in particular, taking the perspective of the '**generalised other**' in the context of the child's play.
- Based on Mead, many sociologists and social psychologists see **language** as fundamental to how the self is **constructed**. Our language provides stories or accounts of what being a person is like ('**discourses**'), which differ between cultures. The view of people as independent, self-contained individuals is a relatively recent invention of western, individualist cultures.
- Two major influences on the development of the self-concept are the **reaction of others** and **comparison with others**. Much of the relevant research is consistent with the theories of James, Cooley and Mead.
- The self-concept develops in fairly regular, predictable ways. During the first few months, the **existential self** emerges, but the **bodily self** is probably the first aspect of the self-concept to develop.
- The bodily self has been studied through (mainly visual) **self-recognition in mirrors**. Self-recognition appears at about 18 months in children, and is also found in chimps.
- While it's generally agreed that passing the mirror test implies a self-concept, this may be no more than a **kinaesthetic self-concept**, which doesn't involve an understanding of psychological states.
- **Self-definition** is related to the use of language, including the use of labels, such as names. By three-and-a-half to four, children seem to have a basic understanding of a **psychological self** (or '**theory of mind**').
- **Age** and **gender** are two basic features of the **categorical self**. The categorical self changes from being described in **physical** to more **psychological** terms during middle childhood through to adolescence.

Links with other topics/chapters

- '*Consciousness*' has several meanings and should be distinguished from 'self-consciousness'/'self-awareness' (Chapter 7).
- One account of how we get to know ourselves is *Bem's self-perception theory* (Chapters 23 and 24). Another, specifically concerned with our emotional experience, is *Schachter's cognitive labelling theory* (Chapter 10).
- The fact that non-humans are sentient raises fundamental *ethical* issues about using them in psychological (and medical) research. The possibility that certain non-human primates may also possess self-consciousness makes their use all the more controversial (Chapter 48).
- The bodily changes involved in *puberty* affect the *adolescent's body image,* which, in turn, affects the self-concept as a whole (Chapter 37).

- *Biological sex* is another fundamental aspect of body image. *Gender* is the social equivalent/social interpretation of sex, and our *gender/gender identity* is another part of the central core of our self-image (Chapter 36).
- *Ageing* involves an inevitable decline in the body's ability to function, as well as characteristic changes in physical appearance (Chapter 39).
- High but fragile and inflated self-esteem can help explain many cases of *aggression* and *violence* (Chapter 29).
- The self-consistency motive implies that self-esteem is threatened by inconsistency (Tesser, 2004). Festinger's *cognitive dissonance theory* has come to be interpreted in terms of threat to self-esteem (Chapter 24).
- Harré's analysis of the concept of self is made from the perspective of *discursive psychology,* which is a *social constructionist* approach (Chapter 2).
- The effect of threat to self on our view of others applies to groups (and not just other individuals). Adorno *et al.*'s *authoritarian personality* claims that *prejudice* and *discrimination* are functional – they can help conceal our own inadequacies (Chapter 25).

Piaget's theory: the child as scientist
- Schemas (or schemata)
- Assimilation, accommodation and equilibration
- Stages of cognitive development
  - *The sensorimotor stage*
  - *The pre-operational stage*
  - *The concrete operational stage*
  - *The formal operational stage*
  - *An evaluation of Piaget's theory*
- Applying Piaget's theory to education

Vygotsky's theory: the child as apprentice
- The cultural level
- The interpersonal level
  - *Internalisation and the social nature of thinking*
  - *Scaffolding and the zone of proximal development (ZPD)*
  - *An evaluation of Vygotsky's theory*
- Applying Vygotsky's theory to education

Bruner's theory
- Similarities and differences between Bruner, Piaget and Vygotsky
- Modes of representation
  - *The enactive mode*
  - *The iconic mode*
  - *The symbolic mode*
- Applying Bruner's theory to education
  - *The 'spiral curriculum'*

Information-processing theories
  - *Metacognition*
- Applying IP theories to education

Conclusions

Chapter summary

Links with other topics/chapters

34

COGNITIVE DEVELOPMENT



INTRODUCTION AND OVERVIEW

According to Meadows (1993, 1995), cognitive development is concerned with the study of 'the child as thinker'. However, different theoretical accounts of how the child's thinking develops rest on very different images of what the child is like:

- Piaget sees the child as an *organism adapting to its environment,* as well as a *scientist constructing its own understanding of the world*
- Vygotsky, in contrast with Piaget (and the information-processing approach), sees the child as a *participant in an interactive process,* by which socially and culturally determined knowledge and understanding gradually become *individualised*
- Bruner, like Vygotsky, emphasises the *social* aspects of the child's cognitive development
- Information-processing theorists see children, like adults, as *symbol manipulators.*

Some years ago, Piaget's theory was regarded as the major framework or paradigm within child development. Despite remaining a vital source of influence and inspiration, both in psychology and education, today there are hardly any 'orthodox' Piagetians left (Dasen, 1994). Many fundamental aspects of Piaget's theory have been challenged, and fewer and fewer developmental psychologists now subscribe to his or other 'hard' stage theories (Durkin, 1995). Nonetheless, Piaget's is still the most comprehensive account of how children come to understand the world (Schaffer, 2004). Arguably, however, it was a little too 'cold' – that is, concerned with purely *intellectual* functions that supposedly can be studied separately from socio-emotional functions. Vygotsky tried to redress the balance (Schaffer, 2004).

PIAGET'S THEORY: THE CHILD AS SCIENTIST

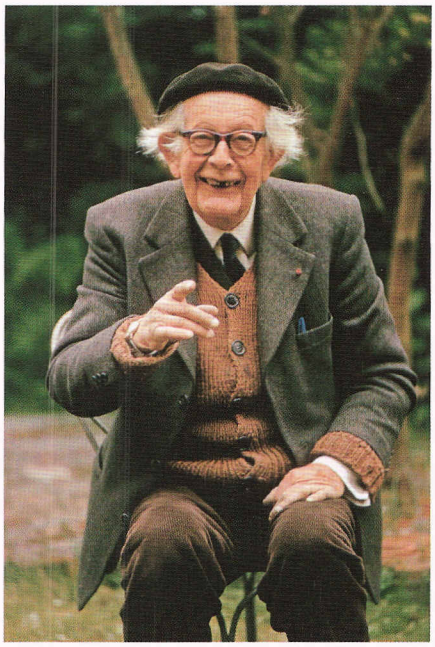
Rather than trying to explain individual differences (why some children are more intelligent than others: see Chapter 41), Piaget was interested in how intelligence itself changes as children grow. He called this *genetic epistemology.*

According to Piaget, cognitive development occurs through the interaction of innate capacities with environmental events, and progresses through a series of *hierarchical, qualitatively different, stages.*

- All children pass through the stages in the *same sequence* without skipping any or (except in the case of brain damage) regressing to earlier ones (they're *invariant*).
- The stages are also the *same for everyone* irrespective of culture (they're *universal*).
- Underlying the changes are certain *functional invariants,* fundamental aspects of the developmental process which remain the same and work in the same way through the various stages. The most important of these are *assimilation, accommodation,* and *equilibration.*
- The principal *cognitive structure* that changes is the *schema* (plural *schemas* or *schemata*).

Schemas (or schemata)

A *schema* (or *scheme*) is the basic building block or unit of intelligent behaviour. Piaget saw schemas as mental structures which organise past experiences and provide a way of understanding future experiences. For Bee (2000), they're not so much categories as the *action of categorising* in some particular way. Life begins with simple schemas, which are largely confined to inbuilt reflexes (such as sucking and grasping). These operate independently of other reflexes, and are activated only when certain objects are present. As we grow, so our schemas become increasingly complex.



Jean Piaget (1896–1980)

Assimilation, accommodation and equilibration

Assimilation is the process by which we incorporate new information into existing schemas. For example, babies will reflexively suck a nipple and other objects, such as a finger. To learn to suck from a bottle or drink from a cup, the initial sucking reflex must be modified through *accommodation.*

When a child can deal with most, if not all, new experiences by assimilating them, it's in a state of *equilibrium.* This is brought about by *equilibration,* the process of seeking 'mental balance'. But if existing schemas are inadequate to cope with new situations, cognitive *disequilibrium* occurs. To restore equilibrium, the existing schema must be 'stretched' in order to take in (or 'accommodate') new information. The necessary and complementary processes of assimilation and accommodation constitute the fundamental process of *adaptation* (see Figure 34.1).

Stages of cognitive development

Each of Piaget's four stages represents a stage in the development of intelligence (hence *sensorimotor intelligence, pre-operational intelligence,* and so on), and is a way of summarising the various schemas a child has at a

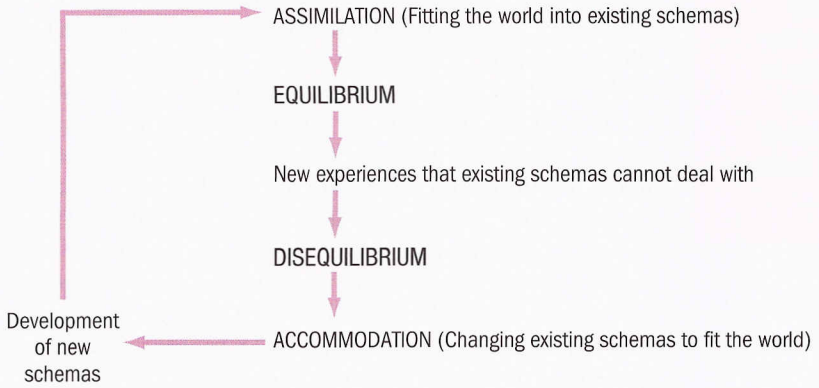


Figure 34.1 Relationship between assimilation, equilibrium, disequilibrium and accommodation in the development of schemas

particular time. The ages shown in Table 34.1 are approximate, because children move through the stages at different rates due to differences in both the environment and their biological maturation. Children also pass through transitional periods, in which their thinking is a mixture of two stages.

Table 34.1 Piaget's four stages of cognitive development

Stage	Approximate age
Sensorimotor	0–2 years
Pre-operational	2–7 years
Concrete operational	7–11 years
Formal operational	11 years onwards

The sensorimotor stage

This lasts for approximately the first two years of life. Infants learn about the world primarily through their senses ('sensori-'), and by doing ('motor'). Based on observations of his own children, Piaget (1952) divided the sensorimotor stage into six substages.

Box 34.1 Reflexes: the six sub-stages of the sensorimotor stage

- **Exercising reflexes (birth to 1 month):** Reflexes are practised until they function smoothly. Infants have no intentionality, and no understanding of an object.
- **Primary circular reactions (1–4 months):** Reflexes are extended to new objects, and infants coordinate simple schemas (such as grasping and looking). Behaviours causing specific events are repeated. Infants look briefly at where a disappearing object was last seen.
- **Secondary circular reactions (4–10 months):** All the senses become coordinated, and the infant can anticipate events and results of actions. A partially hidden object can be found.
- **The coordination of secondary circular reactions (10–12 months):** Infants represent objects in their minds, and demonstrate the beginning of symbolic behaviour and memory. A goal can be decided and then acted on. A completely hidden object can be found.
- **Tertiary circular reactions (12–18 months):** Infants search for environmental novelty and use several interchangeable schemas to achieve goals. Experiments are conducted to see what will happen. An object hidden under one of several covers can be found.
- **Invention of new means through mental combinations (18–24 months):** Infants think about a problem before acting, and thoughts begin to dominate actions. Objects can be manipulated mentally to reach goals. An object placed in a container and then hidden can be found.

(Based on Tomlinson-Keasey, 1985)

Object permanence

Frequent interaction with objects ultimately leads to the development of *object permanence.* As Box 34.1 shows, in the second substage an infant will look where an object disappears for a few moments, but won't search for it. If the object doesn't reappear, the infant apparently loses interest. Piaget called this *passive exploration,* because the infant expects the object to reappear but doesn't actively search for it ('out of sight' is 'out of mind').

In the third substage, an infant will reach for a partially hidden object, suggesting that it realises that the rest of it is attached to the visible part. But if the object is completely hidden, infants make no attempt to retrieve it.

CASE STUDY 34.1 An illustration of lack of object permanence (Piaget, 1963)

At 0,7 (28) [7 months, 28 days] Jacqueline tries to grasp a celluloid duck on top of her quilt. She almost catches it, shakes herself and the duck slides down beside her. It falls very close to her hand but behind a fold in the sheet. Jacqueline's eyes have followed the movement, she has even followed it with her outstretched hand. But as soon as the duck has disappeared – nothing more! It does not occur to her to search behind the fold of the sheet, which

would be very easy to do (she twists it mechanically without searching at all) ... I try showing it to her a few times. Each time she tries to grasp it, but when she is about to touch it I replace it very obviously under the sheet. Jacqueline immediately withdraws her hand and gives up ... Everything occurs as though the child believed that the object is alternately made and unmade ....

In the fourth substage, a hidden object will be searched for ('out of sight' is no longer 'out of mind'), but the infant will persist in looking for it where it was last hidden, even when it's hidden somewhere else (see Figure 34.2).

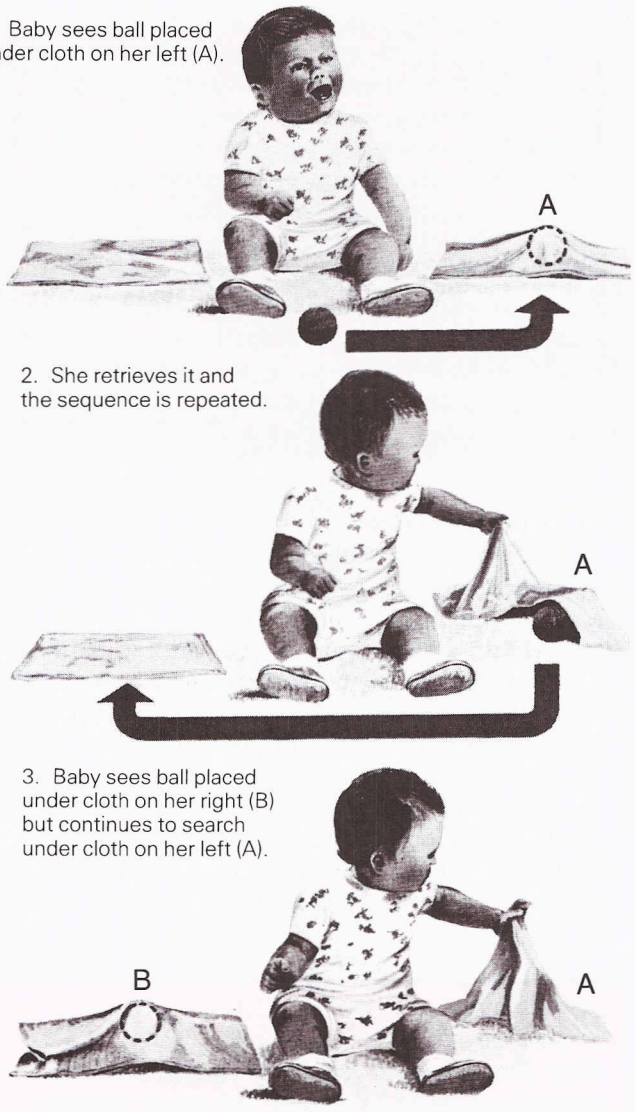


Figure 34.2 Piaget's demonstration of the limited object permanence of babies between eight and twelve months. They can retrieve a hidden object only from its original hiding place, not where it was last hidden. Not until about twelve months will they search under the cushion where they last saw the object hidden; they can do this even when three or four cushions are used. (Others have suggested that this ability appears as early as nine months.) (from Barnes-Gutteridge, 1974)

While after 12 months infants will look for an object where they last saw it hidden, object permanence isn't yet fully developed. Suppose an infant sees an object placed in a matchbox, which is then put under a pillow. When it's not looking, the object is removed from the matchbox and left under the pillow. If the matchbox is given to the infant, it will open it expecting to find the object. On not finding it, the infant won't look under the pillow. This is because it cannot take into account the possibility that something it's not actually seen might have happened (*failure to infer invisible displacements*). Once the infant can infer invisible displacements (after 18 months), the development of object permanence is complete.

Box 34.2 The general symbolic function

- Other cognitive structures that have developed by the end of the sensorimotor stage include *self-recognition* (see Chapter 33), and *symbolic thought* (such as *language*).
- Two other manifestations of the *general symbolic function* are *deferred imitation* and *representational* (or *make-believe*) *play*.
- Deferred imitation is the ability to imitate or reproduce something that's been perceived but is no longer present (Meltzoff & Moore, 1983).
- Representational play involves using one object as though it were another. Like deferred imitation, this ability depends on the infant's growing ability to form mental images of things and people in their absence (to *remember*).

The pre-operational stage

Probably the main difference between this and the sensorimotor stage is the continued development and use of internal images (or '*interiorised' schemas*), symbols and language, especially important for the child's developing sense of self-awareness (see Chapter 33). However, the child tends to be influenced by how things *look*, rather than by logical principles or operations (hence the term 'pre-operational').

Piaget subdivided the stage into the *pre-conceptual* (ages 2–4) and the *intuitive substages* (ages 4–7). The *absolute* nature of the pre-conceptual child's thinking makes relative terms such as 'bigger' or 'stronger' difficult to understand (things tend to be 'biggest' or just 'big'). The intuitive child can use relative terms, but its ability to think logically is still limited.

Seriation and artificialism

In *seriation*, the pre-conceptual child has difficulty arranging objects on the basis of a particular dimension, such as increasing height (Piaget & Szeminska, 1952). *Artificialism* is the belief that natural features have been designed and constructed by people. For example, the question 'Why is the sky blue?' might produce the answer 'Somebody painted it'.

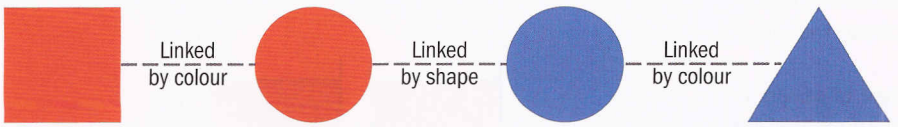


Figure 34.3 Simple example of syncretic thought

Syncretic thought, transductive reasoning, and animism

Syncretic thought is the tendency to link together any neighbouring objects or events on the basis of what individual instances have in common. For example, if a three-year-old is given a box of wooden shapes of different colours and asked to pick out four that are alike, the child might pick the shapes shown in Figure 34.3. Here, the characteristic the child focuses on changes with each second shape that's chosen: a red square is followed by a red circle, which is followed by a blue circle, which is followed by a blue triangle. There's no one characteristic that all four have in common. A five-year-old would be able to select four of the same shape, or four of the same colour, and say what they have in common.

Transductive reasoning involves drawing an inference about the relationship between two things based on a single shared attribute. If both cats and dogs have four legs, then cats must be dogs. This sort of reasoning can lead to *animism,* the belief that inanimate objects are alive.

Box 34.3 Examples of children's animism during the pre-operational stage (from Piaget, 1973)

Cli (three years, nine months) speaking of a motor in a garage: 'The motor's gone to bye-byes. It doesn't go out because of the rain ...'

Nel (two years, nine months) seeing a hollow chestnut tree: 'Didn't it cry when the hole was made?' To a stone: 'Don't touch my garden! ... My garden would cry.' Nel, after throwing a stone onto a sloping bank, watching the stone rolling down said: 'Look at the stone. It's afraid of the grass.'

Nel scratched herself against a wall. Looking at her hand: 'Who made that mark? – It hurts where the wall hit me.'

Dar (one year, eight months/two years, five months) bringing his toy motor to the window: 'Motor see the snow.' Dar stood up in bed, crying and calling out: 'The mummies (the ladies) all on the ground, hurt!' Dar was watching the grey clouds. He was told that it was going to rain. 'Oh, look at the wind! Naughty wind, smack wind.' ... On a morning in winter when the sun shone into the room: 'Oh, good! The sun's come to make the radiator warm.'

ASK YOURSELF...

- Can you think of any examples of adults displaying animistic thinking?
- Do you ever think this way yourself?

Centration

Centration involves focusing on only a single perceptual quality at a time. A pre-conceptual child asked to divide apples into 'big and red' ones and 'small and green' ones will either put all the red (or green) apples together irrespective of their size, or all the big (or small) apples together irrespective of their colour. Until the child can *decentre,* it will be unable to classify things logically or systematically. Centration is also associated with the *inability* to conserve (see below).

ASK YOURSELF...

- How is centration illustrated by syncretic thought (see above)?

Egocentrism

According to Piaget, pre-operational children are *egocentric,* that is, they see the world from their own standpoint and cannot appreciate that other people might see things differently. They cannot put themselves 'in other people's shoes' to realise that other people don't know or perceive everything they themselves do. Consider the following example (Phillips, 1969) of a conversation between an experimenter and a four-year-old boy:

Experimenter:	'Do you have a brother?'
Child:	'Yes.'
Experimenter:	'What's his name?'
Child:	'Jim.'
Experimenter:	'Does Jim have a brother?'
Child:	'No.'

KEY STUDY 34.1 The 'Swiss mountain scene' test of egocentrism (Piaget & Inhelder, 1956)

- The three papier-mâché model mountains shown in Figure 34.4 are of different colours. One has snow on the top, one a house, and one a red cross.
- The child walks round and explores the model, and then sits on one side while a doll is placed at some different location. The child is shown 10 pictures of different views of the model and asked to choose the one that represents how the doll sees it.
- Four-year-olds were completely unaware of perspectives other than their own, and always chose a picture which matched *their* view of the model. Six-year-olds showed some awareness, but often chose the wrong picture. Only

seven- and eight-year-olds consistently chose the picture that represented *the doll's* view.

- According to Piaget, children below the age of seven are bound by the *egocentric illusion*. They fail to understand that what they see is *relative to their own position*, and instead take it to represent 'the world as it really is'.

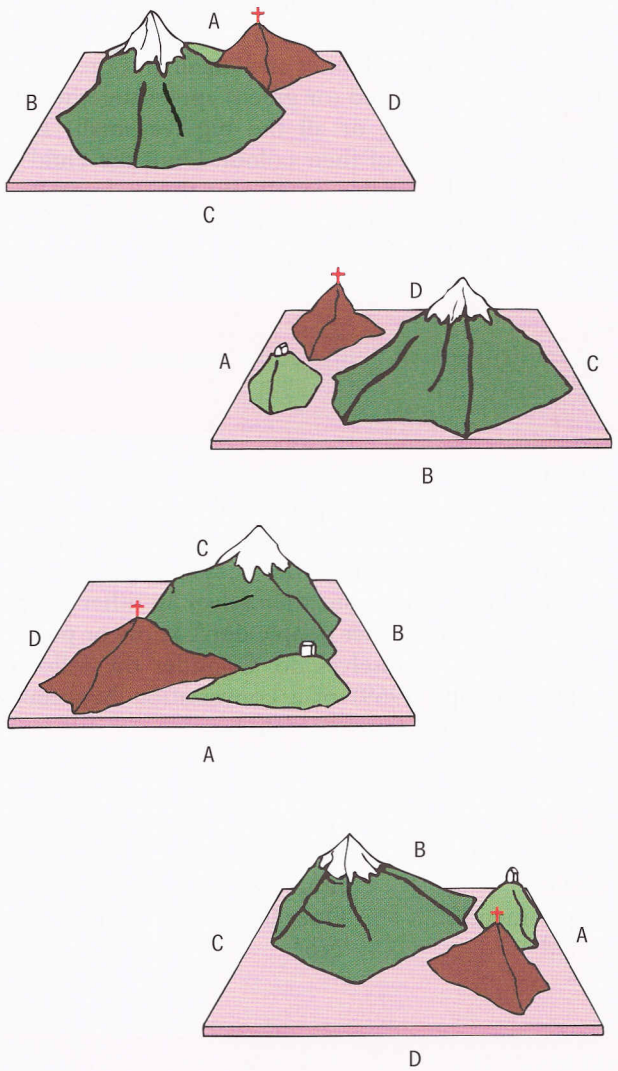


Figure 34.4 Piaget and Inhelder's three-mountain scene, seen from four different sides (from Smith & Cowie, 1988)

Conservation

Conservation is the understanding that any quantity (such as number, liquid quantity, length, or substance) remains the same despite physical changes in the arrangement of objects. Piaget believed that pre-operational children cannot conserve because their thinking is dominated by the *perceptual* nature of objects (their 'appearance').

The inability to conserve is another example of centration. With liquid quantity, for example, the child centres on just one dimension of the beaker, usually its height, and fails to take width into account (see Figure 34.5).

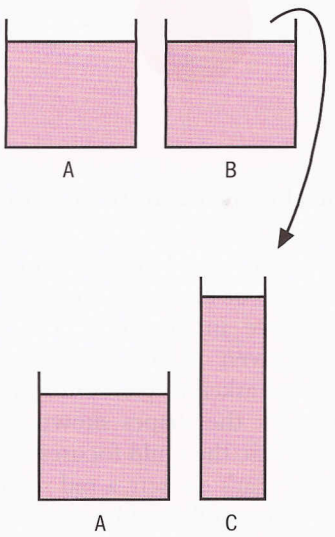


Figure 34.5 The conservation of liquid quantity. Although the child agrees that there's the same amount of liquid in A and B, when the contents of B are poured into C, the appearance of C sways the child's judgement so that C is now judged to contain more liquid than A ('it looks more' or 'it's taller'). Although the child has seen the liquid poured from B into C and agrees that none has been spilled or added in the process (what Piaget calls 'identity'), the appearance of the higher level of liquid in the taller, thinner beaker C is compelling

Only in the concrete operational stage do children understand that 'getting taller' and 'getting narrower' tend to cancel each other out (*compensation*). If the contents of the taller beaker are poured back into the shorter one, the child will again say that the two shorter beakers contain the same amount. But it cannot perform this operation mentally and so lacks *reversibility* (understanding that what can be done can be undone without any gain or loss). These same limitations apply to other forms of conservation, such as number, and substance/quantity (see Figures 34.6 and 34.7).

The concrete operational stage

The child is now capable of performing logical operations, but only in the presence of actual objects. S/he can conserve, and shows reversibility and more logical classification.

Further examples of the child's ability to decentre include its appreciation that objects can belong to more than one class (as in the case of Andrew being Bob's brother *and* Charlie's best friend). There's also a significant *decline* in egocentrism (and the growing *relativism* of the child's viewpoint), plus the onset of seriation and reciprocity of relationships (such as knowing that adding one to three produces the same amount as taking one from five).

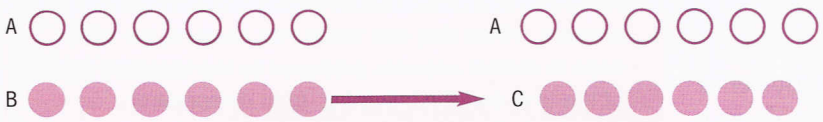
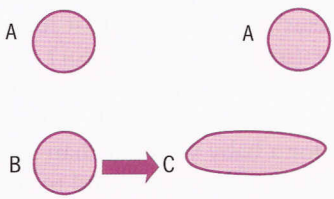


Figure 34.6 Number conservation using counters. Two rows of counters are put in a one-to-one correspondence and then one row is pushed together. The pre-operational child usually thinks there are more counters in A than in C because A is 'longer', despite being able to count correctly and agreeing that A and B have equal numbers

Figure 34.7 Substance or quantity conservation using plasticine. Two equal-sized balls of plasticine are used. B is rolled into a sausage shape (C); the pre-operational child typically thinks there's more plasticine in C than A, having originally agreed that A and B have the same amount



One remaining problem for the concrete operational child is *transitivity tasks.* For example, if told that 'Alan is taller than Bob, and Bob is taller than Charlie' and asked whether Alan or Charlie is taller, children under eleven cannot solve this problem entirely in their heads. They can usually only solve it using real (or concrete) objects (such as dolls).

Box 34.4 Horizontal and vertical décalage

- Some types of conservation are mastered before others, and their order tends to be invariant.
- *Liquid quantity* is mastered by age 6–7, *substance/quantity* and *length* by 7–8, *weight* by 8–10, and *volume* by 11–12.
- This step-by-step acquisition of new operations is called *décalage* (displacement or 'slips in level of performance').
- In conservation, décalage is *horizontal* because there are inconsistencies *within* the same kind of ability or operation (a seven-year-old child can conserve number but not weight, for example). *Vertical* décalage refers to inconsistencies *between* different abilities or operations (a child may have mastered all kinds of classification, but not all kinds of conservation).

The formal operational stage

While the concrete operational child is still concerned with manipulating things (even if this is done mentally), the formal operational thinker can manipulate *ideas* or *propositions* and can reason solely on the basis of verbal statements ('first order' and 'second order' operations respectively). 'Formal' refers to the ability to follow the form of an argument without reference to its particular content. In transitivity problems, for example, 'If A is taller than B, and B is taller than C, then A is taller than C', is a form of argument whose conclusion is logically true, regardless of what A, B and C might refer to.

Formal operational thinkers can also think *hypothetically,* that is, about what *could be* as well as what *actually is.* For example, asked what it would be like if people had tails, they might say 'Dogs would know when you were happy' or 'Lovers could hold their tails in secret under the table'. Concrete operational thinkers might tell you 'not to be so silly', or say where on the body the tail might be, showing their dependence on what they've actually seen (Dworetzky, 1981). This ability to imagine and discuss things that have never been encountered is evidence of the continued decentration that occurs beyond concrete operations.

Formal operational thinkers also display *hypothetico-deductive reasoning,* as demonstrated in a series of tasks devised by Inhelder & Piaget, 1958.

KEY STUDY 34.2 A demonstration of formal operational thinking (Inhelder & Piaget, 1958)

- Inhelder and Piaget gave adolescents five containers filled with clear liquid. Four were 'test chemicals' and one an 'indicator'. When the correct combination of one or more test chemicals was added to the indicator, it turned yellow. The problem was to find this combination.
- *Pre-operational children* simply mixed the chemicals randomly, and *concrete operational* children, although more systematic, generally failed to test all possible combinations.
- Only *formal operational* thinkers considered all alternatives and systematically varied one factor at a time. Also, they often wrote down all the results and tried to draw general conclusions about each chemical.

An evaluation of Piaget's theory

As we noted in the *Introduction and overview* Piaget's theory has had an enormous impact on our understanding of cognitive development. However, as Flavell (1982), and others (e.g. Siegal, 2003) have remarked:

> Like all theories of great reach and significance ... it has problems that gradually come to light as years and years of thinking and research get done on it. Thus, some of us now think that the theory may in varying degrees be unclear, incorrect and incomplete.

Object permanence

Piaget's claims about the sensorimotor stage have been criticised in both general and specific terms. Bower & Wishart (1972), for example, found that how an object is made to disappear influences the infant's response. If the infant is looking at an object and reaching for it and the lights are turned off, it will continue to search for up to one-and-a-half minutes (as observed using infrared cameras). This suggests that it *does* remember the object is there (so, 'out of sight' *isn't* 'out of mind'). Baillargeon (1987) has shown that object permanence can occur as early as three-and-a-half months, and that it isn't necessary for a baby younger than six months to see the whole object in order to respond to it.

Centration

One way to study centration (and classification) is through *class inclusion tasks.* If a pre-operational child is presented with several wooden beads, mostly brown but a few white, and asked 'Are they all wooden?', the child will respond correctly. If asked 'Are there more brown or more white beads?', the child will again respond correctly. But if asked 'Are there more brown beads or more beads?', the child will say there are more brown beads.

ASK YOURSELF...

- Why do you think they say there are more brown beads?

The brown beads are more numerous than the white, and can be perceived in a more immediate and direct way than the wooden beads as a whole (despite the first question being answered correctly). For Piaget, the child fails to understand the relationship between the whole (the *superordinate* class of wooden beads) and the parts (the *subordinate* classes of brown and white beads). This is another example of the inability to decentre. However, Donaldson (1978) has asked if the difficulty the child experiences is to do with what's expected of it and how the task is presented.

KEY STUDY 34.3 Let sleeping cows lie

- Donaldson (1978) describes a study with six-year-olds using four toy cows, three black and one white. The cows were laid on their sides and the children told they were 'sleeping'. Of those asked 'Are there more black cows or more cows?', 25 per cent answered correctly. But of those asked 'Are there more black cows or more sleeping cows?', 48 per cent answered correctly.
- Chapman & McBride (1992) conducted a similar study with four- to ten-year-olds involving sleeping horses. Although they replicated the results reported by Donaldson, most children couldn't effectively justify their answers. When this was taken into account, the difference in correct answers produced by the standard form of the task and the 'sleeping' form disappeared.
- In both studies, a majority of children still fail even under conditions where task demands are reduced. This suggests a deep *conceptual* difficulty, as well as a linguistic one (Siegal, 2003).



- According to Gelman (1978), the word 'more' has a different meaning for children and adults. Adults use 'more' to mean 'containing a greater number'. But for children 'more' refers to the general concept of larger, longer, occupying more space, and so on.

Egocentrism

Gelman (1979) has shown that four-year-olds adjust their explanations of things to make them clearer to a blindfold listener. This isn't what we'd expect if, as Piaget claims, children of this age are egocentric. Nor would we expect four-year-olds to use simpler forms of speech when talking to two-year-olds (Gelman, 1979) or choose appropriate birthday presents for their mothers (Marvin, 1975, in Morris, 1988).

Critics of the 'Swiss mountain scene' test (Key Study 34.1) see it as an unusually difficult way of presenting a problem to a young child. Borke (1975) and Hughes (cited in Donaldson, 1978) have shown that when the task is presented in a meaningful context (making what Donaldson calls 'human sense'), even three-and-a-half-year olds can appreciate the world as another person sees it. These are all examples of *perspective-taking.* According to Siegal (2003):

> ... A reasonable conclusion is that young children are not egocentric all of the time, but their perspective-taking skills clearly improve during childhood ...

Box 34.5 Perspective-taking, false beliefs and theory of mind

- According to Flavell *et al.* (1990), there are two levels of perspective-taking (PT) ability:
  - (a) *level 1* (two- to three-year-olds) – the child knows that some other person experiences something differently (*perceptual* PT)
  - (b) *level 2* (four- to five-year-olds) – the child develops a whole series of complex rules for figuring out precisely what the other person sees or experiences (*affective* and *cognitive* PT).
- In a study of children's ability to distinguish between appearance and reality, Flavell (1986) showed children a sponge painted to look like a rock. They were asked what it looked like and what it 'really' was. Three-year-olds said either that it looked like a sponge and was a sponge, or that it looked like a rock and was a rock. However, four- to five-year-olds could say that it looked like a rock but was in fact a sponge.
- Gopnik & Astington (1988) allowed children to *feel* the sponge before asking them the questions used in Flavell's study. The children were then told: 'Your friend John hasn't touched this, he hasn't squeezed it. If John just sees it over here like this, what will he think it is? Will he think it's a rock or a sponge?'

ASK YOURSELF...

- How do you think the three-year-olds answered?
- How do you think the four- to five-year-olds answered?

- Typically, three-year-olds said that John would think it was a sponge (which it is), while four- to five-year-olds said he'd think it was a rock (because he hadn't had the opportunity of touching/squeezing it). In other words, the older children were attributing John with a *false belief*, which they could do only by taking John's perspective.
- Evidence like this has led several theorists (e.g. Gopnik & Wellman, 1994) to propose that four- to five-year-olds have developed a quite sophisticated *theory of mind* (Premack & Woodruff, 1978). This refers to the understanding that people (and not objects) have desires, beliefs and other mental states, some of which (such as beliefs) can be false (*cognitive* PT). The older children in Gopnick and Astington's study understood that John wouldn't know something which *they did*.

Conservation

The ability to conserve also seems to occur earlier than Piaget believed. Rose & Blank (1974) showed that when the *pre-transformation question* (the question asked before one row of counters, say, is rearranged) was dropped, six-year-olds often succeeded on the number conservation task. Importantly, they made fewer errors on the standard version of the task when tested a week later. These findings were replicated by Samuel & Bryant (1984) using conservation of number, liquid quantity and substance.

According to Donaldson (1978), the standard version of the task unwittingly 'forces' children to produce the wrong answer against their better judgement, by the mere fact that the same question is asked twice, before and after the transformation. Hence, children believe they're expected to give a different answer on the second question. On this explanation, *contextual cues* may override purely linguistic ones. Children may think the experimenter has rejected their first answer, so they feel they're required to give a *different* answer on the second question in order to please the adult questioner. This is the problem of a *clash of conversational worlds* between child and adult (Siegal, 2003).

Bruner (1966) argues that children's attention is so captured by the transformed state that they disregard the pre-transformed state and fail to attend to it when asked the second question.

ASK YOURSELF...

- Apart from dropping the pre-transformation question, how else might conservation tasks be modified in order to prevent children from being distracted in this way?

Children can be asked to *predict* the outcome, without actually witnessing it. Under these conditions, those who'd normally 'fail' are more likely to give the correct answer (Siegal, 2003).

According to Piaget, it shouldn't matter *who*, in the case of number conservation, rearranges the counters/Smarties or how this happens. Yet when 'Naughty Teddy', a glove puppet, causes the transformation 'accidentally', pre-operational children can conserve number and length (McGarrigle & Donaldson, 1974; Light *et al.*, 1979). This also applies when the transformation is made by a person other than the experimenter (Hargreaves *et al.*, 1982; Light, 1986).

While Piaget's original procedure might convey the implicit message 'take note of the transformation because it's relevant', studies using *accidental transformations* (such as the 'Naughty Teddy' experiment) might convey the message 'ignore the transformation, it makes no difference'. The standard Piagetian task involves an *irrelevant perceptual change* (nothing is added or taken away). But where some *actual change* occurs, children tested under the accidental/incidental transformation condition should do *worse* than those tested in the standard way (due to the implicit message to ignore the transformation). This prediction has been supported in several studies (Light & Gilmour, 1983; Moore & Frye, 1986).

Cross-cultural tests of the stages

According to Schaffer (2004), Piaget's account gives the impression that the stages are an inevitable consequence of being human, and that external influences stemming from the social environment play no part. What evidence is there to support this?

The few cross-cultural studies of the sensorimotor stage have shown the substages to be universal. Overall, it seems that ecological or cultural factors *don't* influence the sequence of stages, but *do* affect the rate at which they're attained (Segall *et al.*, 1999).

CROSS-CULTURAL STUDY 34.1

Cultural influences on conservation and spatial relationships (Dasen, 1994)

- Dasen cites studies he conducted in remote parts of the central Australian desert with 8–14-year-old Aborigines. He gave them *conservation*-of-liquid, weight, and volume tasks, plus a task that tested understanding of *spatial relationships*. This involved either:
  (a) two landscape models, one of which could be turned round through 180° – the participants had to locate an object (doll or sheep) on one model and then find the same location on the second model, or
  (b) a bottle was half-filled with water, then tilted into various positions, with a screen hiding the water level – participants were shown outline drawings of the bottle and they had to draw in the water level.
- On *conservation* tasks, the same shift from pre-operational to concrete operational thought was found as with Swiss children – but it took place between 10–13 years of age (instead of 5–7). A fairly large proportion of adolescents and adults also gave non-conservation answers.



- On the *spatial* tasks, again there was the same shift from pre- to concrete operational thought as for Swiss children, but they found the spatial task *easier* than the conservation tasks. In other words, operational thinking develops earlier in the spatial domain, the *reverse* of what's found for Swiss children.
- According to Dasen, this makes good sense in terms of Aboriginal culture, where things *aren't quantified*. Water is vital for survival, but the exact quantity matters little. Counting things is unusual, and number words only go up to five (after which everything is 'many'). By contrast, finding one's way around is crucial: water-holes must be found at the end of each journey and family members meet up at the end of the day after having split up in order to search for water. The acquisition of a vast array of spatial knowledge is helped by the mythology, such as the 'dream time' stories that attribute a meaning to each feature of the landscape and to routes travelled by ancestral spirits.

Conservation experiments have also been conducted with Eskimo, African (Senegal and Rwande), Hong Kong and Papua New Guinea samples. Consistent with Dasen's findings, children from non-western cultures often show a considerable lag in acquiring operational thought. But this applies mainly to those having minimal contact with white culture. Where Aborigines, for example, live in white communities and attend school there, they perform at a similar level to whites. Even where there's a lag in development compared with whites, the stages still appear in the same order. So (as with the sensorimotor substages):

> ... Cultural factors ... can affect *rate* of attainment; they do not alter developmental *sequence* ... (Schaffer, 2004)

As Dasen (1994) puts it:

> The deep structures, the basic cognitive processes, are indeed universal, while at the surface level, the way these basic processes are brought to bear on specific contents, in specific contexts, is influenced by culture. Universality and cultural diversity are not opposites, but are complementary aspects of all human behaviour and development.

Dasen has argued that only one-third of adolescents and adults actually attain formal operations, and that in some cultures it's not the typical mode of thought. However, Shea (1985) argues that it would be premature to conclude that formal operations don't 'exist' in certain societies based on the results of a few Piagetian tasks. Highly abstract thinking of some kind can often be found in traditional court cases (Jahoda, 1980), and land disputes (Hutchins, 1980) – even if they're not strictly 'formal'. According to Segall *et al.* (1999), it might be more accurate to argue that formal operational thinking 'in effect, scientific reasoning – is not what is valued in all cultures'.

The role of social factors in cognitive development

Meadows (1995) maintains that Piaget implicitly saw children as largely independent and isolated in their construction of knowledge and understanding of the physical world (children as scientists). This excluded the contribution of other people to children's cognitive development. The social nature of knowledge and thought is a basic proposition of Vygotsky's theory (see below). According to Vygotsky (1987):

> The child [in Piaget's theory] is not seen as part of the social whole, as a subject of social relationships. He is not seen as a being who participates in the societal life of the social whole to which he belongs from the outset. The social is viewed as something standing outside the child.

(We should note that one of the implications of Piaget's theory for education is that teachers should encourage *children learning from each other:* see Box 34.6.)

Despite all these (and other) criticisms, Siegal (2003) believes that:

> ... Piaget's intriguing observations opened up many fruitful lines of enquiry and ... while many of his interpretations have by and large been modified or superseded, he set the agenda for a vast body of productive research in the twentieth and twenty-first centuries.

CRITICAL DISCUSSION 34.1 Does development really take place in stages?

- According to Flavell *et al.* (1993), there are three criteria for distinguishing a stage model.
  - (i) *Qualitative change:* at certain points in development, thought and behaviour undergo change that's not just a matter of doing something faster or with more precision. It's about doing it *differently,* such as adopting another *kind* of mental strategy.
  - (ii) *Abruptness of change:* a stage model portrays development as more of a staircase than an incline.
  - (iii) *Across-the-board change:* change occurs simultaneously in a wide range of functions (for example, a new stage in reasoning affects *all* aspects of problem-solving). This is known as *domain-general* change.

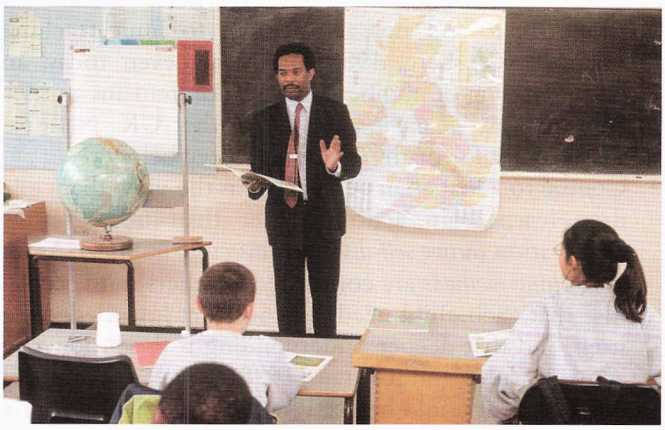
ASK YOURSELF...

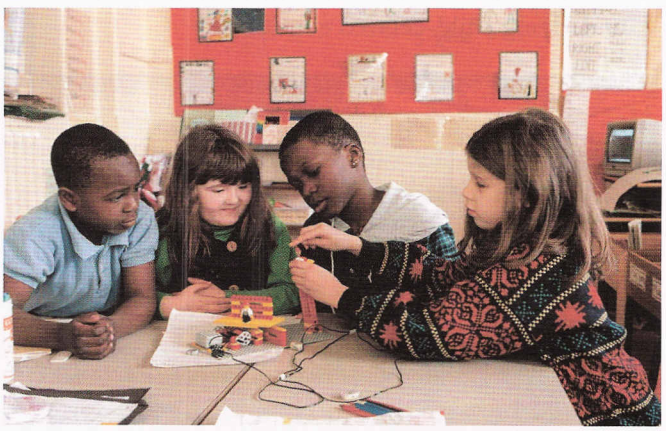
- From what you know now of Piaget's theory and evaluations of it, do you consider that a domain-general (stage) approach is the most accurate/valid way of depicting children's cognitive development?

- Increasingly, psychologists in recent years have come to see development as more *complex, uneven* and *gradual* than it's described by stage models such as Piaget's. Instead, they argue that development is more accurately described as *domain-specific*. For instance, the example of egocentrism and PT (see Box 34.5) applies to other areas. As Schaffer (2004) puts it:

  > *... Development rarely assumes the stepwise form that this model suggests ... closer inspection reveals continuities which a theory based on periodically occurring qualitative shifts would not expect ... Piaget's domain-general view needs to be replaced by a domain-specific view ... development frequently occurs at different tempos and in different ways across various functions which Piaget had originally put all under one umbrella.*

- The way in which researchers such as Piaget (and Kohlberg: see Chapter 35) try to determine a child's developmental stage is to focus on *what individuals can do strictly on their own*. This reflects the implicit view of the individual as *self-regulating* and *independent* (Moghaddam, 2002), a view most clearly and vigorously rejected by Vygotsky (see below).





In the traditional classroom (top), the teacher is at the centre of the learning process imparting ready-made ('academic'/'school') knowledge. By contrast, in the Piagetian classroom (bottom), the child actively discovers knowledge for him/herself, often through interaction with other children in small groups

Applying Piaget's theory to education

Although Piaget wrote very little about the educational implications of his developmental theory (Davis, 2003), it has three main implications for education (Brainerd, 1983): the concept of *readiness,* the *curriculum* (what should be taught) and *teaching methods* (how the curriculum should be taught).

- *Readiness* relates to limits set on learning by a child's current stage of development (see Box 34.6). According to Schaffer (2004), Piaget's most relevant contribution to education (especially the teaching of maths and science: see below) is the recognition that careful thought must be given to the individual child's capacity for handling particular experiences. What's needed is a *child-centred* approach, whereby the tasks set by the teacher are adapted as precisely as possible to the child's cognitive level.
- Regarding the *curriculum,* the greatest impact of his theory has been on science and maths. Teaching materials should consist of concrete objects that children can easily manipulate. But rather than trying to base a curriculum on Piagetian stages, it would be more useful to modify the curriculum in line with what's known about them, and not allow them to limit teaching methods (Ginsberg, 1981). However, even today, an understanding of number conservation remains a criterion for an *attainment target* in the UK National Curriculum for maths (Davis, 2003: see below).
- Central to a Piagetian perspective is the view that children learn from actions rather than from passive observation (*active self-discovery/discovery learning*). As far as *teaching methods* are concerned, teachers must recognise that each child needs to construct knowledge for itself, and that deeper understanding is the product of active learning (Smith *et al.*, 1998). Piaget's account of development could be used by those involved in early education as a *formalisation* of many of the assumptions underlying child-centred education.

Box 34.6 The role of the teacher in the Piagetian classroom

- It's essential for teachers to assess very carefully each individual child's current stage of cognitive development (this relates to the concept of readiness). The child can then be set tasks tailored to its needs which become *intrinsically motivating*.
- Teachers must provide children with learning opportunities that enable them to advance to the next developmental step. This is achieved by creating *disequilibrium* (see page 582). Rather than providing the appropriate materials and allowing children to 'get on with it', teachers should create a proper balance between actively guiding and directing children's thinking patterns, and providing opportunities for them to explore by themselves (Thomas, 1985).
- Teachers should be concerned with the *learning process* rather than its end product. This involves encouraging children to ask questions, experiment and explore. Teachers should look for the reasoning behind children's answers, particularly when they make mistakes.
- Teachers should encourage children to *learn from each other*. Hearing other (and often conflicting) views can help break down egocentrism, and working in pairs can promote long-lasting PT (e.g. Doise & Mugny, 1984). This has powerful implications for the British educational system (and any others), which from infant school through to university assesses understanding and knowledge at an individual level (Davis, 2003).

VYGOTSKY'S THEORY: THE CHILD AS APPRENTICE

Vygotsky didn't produce a fully formed theory or coherent body of research, and many of his ideas weren't spelled out in detail. His works were published in the former Soviet Union in the 1920s and 1930s, but weren't translated into English until the early 1960s (*Thought and Language,* 1962).



Lev Vygotsky (1896–1934)

Vygotsky and Piaget agree that development doesn't occur in a vacuum: knowledge is constructed as a result of the child's active interaction with the environment. But, as we've seen, for Piaget that environment is essentially *asocial* (so his account is described as *constructivist*. But for Vygotsky:

> ... Human nature cannot be described in the abstract; whatever course children's mental growth takes is to a large extent a function of the cultural tools that are handed down to them by other people ... (Schaffer, 2004)

So, for Vygotsky, cognitive development is a thoroughly *social* process (hence, he's a *social constructivist*). His aim was to spell out and explain how the higher mental functions (reasoning, understanding, planning, remembering, and so on) arise out of children's social experiences. He did this by considering human development in terms of three levels: the *cultural, interpersonal* and *individual*. He had much more to say about the first two than the latter, so we'll concentrate on these here.

The cultural level

Children don't need to 'reinvent the world anew' (as Piaget seemed to believe). They can benefit from the accumulated wisdom of previous generations; indeed, they cannot avoid doing so through interactions with caregivers. So each generation stands on the shoulders of the previous one, taking over the particular culture – including its intellectual, material, scientific and artistic achievements – in order to develop it further before handing it on, in turn, to the next generation (Schaffer, 2004).

ASK YOURSELF...

- Can you think of examples of cultural tools that might be especially important for children's cognitive development?

Cultural tools are what the child 'inherits'. These can be:

- *technological* (clocks, bicycles and other physical devices)
- *psychological* (concepts and symbols, such as language, literacy, maths and scientific theories)
- *values* (such as speed, efficiency, and power).

It's through such tools that children learn to conduct their lives in socially effective and acceptable ways, as well as understanding how the world works.

Schaffer (2004) gives the example of *computers* as a major – and relatively recent – cultural tool:



The computer: a powerful and pervasive cultural tool

There are few instances in history where a new technical invention has assumed such a dominant role in virtually all spheres of human activity as the computer... in the space of just a few decades computing expertise is regarded as an essential skill for even quite young children to acquire ...

The most essential cultural tool is *language.*

Box 34.7 The importance of language as a cultural tool

- It's the pre-eminent means of passing on society's accumulated knowledge: how others speak and what they speak about is the main channel of communicating culture from adult to child.
- It enables children to regulate their own activities.
- At about age seven, speech becomes internalised to form internal thought: an essential *social* function thus becomes the major tool for *cognitive* functioning.

The interpersonal level

It's here that culture and the individual meet, and it's the level at which Vygotsky made his major contribution.

Internalisation and the social nature of thinking

The ability to think and reason by and for ourselves (inner speech or verbal thought) is the result of a fundamentally *social* process. At birth, we're social beings capable of interacting with others, but able to do little either practically or intellectually, by or for ourselves. But gradually we move towards self-sufficiency and independence, and by participating in social activities our abilities become transformed. For Vygotsky, cognitive development involves an active *internalisation* of problem-solving processes that takes place as a result of mutual interaction between children and those with whom they have regular social contact (initially the parents, but later friends and classmates and teachers).

This is the reverse of how Piaget (at least initially) saw things. Piaget's idea of 'the child as a scientist' is replaced by the idea of 'the *child as an apprentice',* who acquires the culture's knowledge and skills through graded collaboration with those who already possess them (Rogoff, 1990). According to Vygotsky (1981):

Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane.

So, cognitive development progresses from the *intermental* to the *intramental* (from joint regulation to self-regulation).

Box 34.8 Pointing: an example of cultural development from the physical to the social

- Initially, a baby's pointing is simply an unsuccessful attempt to grasp something beyond its reach.

- When the mother sees her baby pointing, she takes it as an 'indicatory gesture' that the baby wants something, and so helps it, probably making the gesture herself.
- Gradually, the baby comes to use the gesture deliberately. The 'reaching' becomes reduced to movements which couldn't themselves achieve the desired object even if it were in reach, and is accompanied by cries, looks at the mother and eventually words.
- The gesture is now directed towards the mother (it has become a gesture 'for others'), rather than towards the object (it's no longer a gesture 'in itself': Meadows, 1995).

Scaffolding and the zone of proximal development (ZPD)

The *zone of proximal development* (ZPD) defines those functions that haven't yet matured but are in the process of maturing (Vygotsky, 1978). These could be called the 'buds' or 'flowers' rather than the 'fruits' of development. The actual developmental level characterises mental development *retrospectively,* while the ZPD characterises mental development *prospectively.*

ASK YOURSELF...

- What do you understand by this distinction regarding level of mental development? (See Box 34.9, page 595.)

Scaffolding refers to the kind of guidance and support adults provide children in the ZPD by which children acquire their knowledge and skills (Wood *et al.*, 1976; Wood & Wood, 1996). As a task becomes more familiar to the child and more within its competence, those who provide the scaffold leave more and more for the child to do until it can perform the task successfully. In this way, the developing thinker doesn't have to create cognition 'from scratch': there are others available who've already 'served' their own apprenticeship.

The internalised cognitive skills remain social in two senses. First, as mature learners we can 'scaffold' ourselves through difficult tasks (self-instruction), as others once scaffolded our earlier attempts. Second, the only skills practised to a high level of competence for most people are those offered by their culture: cognitive potential may be universal, but cognitive expertise is culturally determined (Meadows, 1995).

ASK YOURSELF...

- How does this distinction between cognitive potential and expertise relate to Dasen's (1994) assessment of Piaget's stages (see Cross-Cultural Study 34.1, page 590)?

Since the 1980s, research has stressed the role of social interaction in language development, especially the facilitating effects of the use of child-contingent language by adults talking with children (Meadows, 1995: see Chapter 19). This 'fit' between adult and child language closely resembles the concept of 'scaffolding'.

KEY STUDY 34.4 Scaffolding (or individual abilities are built on social support) (Wood *et al.*, 1976)

- Wood *et al.* found that on a construction task with four- to five-year-olds (fitting wooden blocks together with pegs to make a pyramid), different mothers used instructional strategies which varied in their levels of specificity. These ranged from general verbal encouragement to direct demonstration of a relevant action.
- No single strategy guaranteed learning, but the most efficient maternal instructors were those who combined general and specific interventions according to the child's progress.
- The most useful help is that which adapts itself to the learner's successes and failures (Bruner, 1983). An example would be using a general instruction initially until the child runs into difficulties. At this point, a more specific instruction or demonstration is given. This style allows the child considerable autonomy, but also provides carefully planned guidance in its ZPD.

Although 'scaffolding' doesn't actually explain how children internalise what the tutor provides, it draws attention to the conditions under which learning usually occurs. It also emphasises the essential *social-interactive* nature of these conditions (Schaffer, 2004).

According to Vygotsky, a more knowledgeable child can provide instruction and guidance for another, in order to bring the latter up to a similar level of competence (*peer tutoring:* Foot & Howe, 1998; Foot *et al.*, 1990).

As would be predicted from Vygotsky's theory, there's also evidence of scaffolding processes in everyday, naturalistic contexts. These are often linked to the transmission across generations of culturally valued skills, such as weaving among the Zinacauteco Mexicans and American mothers' involvement in their preschoolers' development of number (Durkin, 1995).

ASK YOURSELF...

- What would you say is the key difference between Vygotsky's and Piaget's theories?

An evaluation of Vygotsky's theory

- Vygotsky's theory clearly 'compensates' for one of the central limitations of Piaget's theory. As Segall *et al.* (1999) put it:

  Piaget produced a theory of the development of an 'epistemic subject', an idealised, non-existent individual, completely divorced from the social environment.

For Vygotsky, culture (and especially language) plays a key role in cognitive development: the development of the individual cannot be understood – and indeed cannot happen – outside the context of social interaction.

- While Vygotsky's theory hasn't been tested cross-culturally as Piaget's has, it has influenced cross-cultural psychology through the development of *cultural psychology* (e.g. Cole, 1990: see Chapter 47) and related approaches, such as 'socially shared cognition' (Resnick *et al.*, 1991) and 'distributed cognition' (Salomon, 1993). According to all these approaches:

  ... cognitive processes are not seen as exclusively individual central processors, but ... are situation specific ... therefore cognition is not necessarily situated 'within the head' but is shared among people and settings ...'. (Segall *et al.*, 1999)

- Although Vygotsky didn't carry out much empirical research himself, the specific nature of many of his ideas has made it possible for others to follow them up. This has resulted in a substantial body of research on scaffolding, peer tutoring and other aspects of the educational process (see below).
- But, in contrast with Piaget's theory, Vygotsky's isn't truly developmental. His ideas are based on a 'prototype' child, who functions in the same way at age two or twelve: nothing is said about changes in the processes underlying learning (such as attention, memory and intellectual capacities) and how these affect social interaction at different ages.
- Schaffer (2004) believes that his neglect of *emotional* factors is a serious omission: he makes no reference to struggles, the frustrations of failure, the joys of success, or generally what *motivates* the child to achieve particular goals:

  ... While cognition was given a social appearance, Vygotsky's treatment of the child is as 'cold' as Piaget's ... (Schaffer, 2004)

Applying Vygotsky's theory to education

In describing Vygotsky's most important ideas, we've seen how many of them are related (directly or indirectly) to the learning process – and, hence, to education. Examples include the ZPD, scaffolding and peer tutoring. According to Davis (2003):

By emphasizing the social nature of development, Vygotsky's theory is not only a theory of learning, it also offers a theory of teaching, since language is the prime medium for sharing knowledge in formal contexts such as schools and informally in the home ...

Box 34.9 Applying the concept of the ZPD to education

Suppose a child is currently functioning at level 'x' in terms of attainment. Through innate/environmental means, the child has the potential to reach level 'x + 1'.

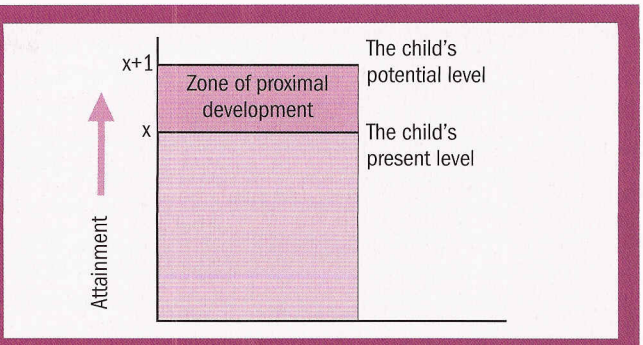


Figure 34.8 Vygotsky's zone of proximal development

The area between 'x' and 'x + 1' is the child's ZPD. The ZPD may be different for individual children, and children with large ZPDs will have a greater capacity to be helped than those with small ZPDs. Irrespective of the ZPD's size, Vygotsky saw the teacher as being responsible for giving children the cues they need or taking them through a series of steps towards the solution of a problem.

(Based on Sutherland, 1992)

In *collaborative learning*, children at similar levels of competence work together, either in pairs or groups. Slavin's (1990) *Student Teams Achievement Divisions* (STAD) involves small groups of varying ability, gender and ethnic background working on a topic. These groups show greater achievement than controls taught by more conventional methods. Educators now believe that both collaborative learning and *peer tutoring* can offer an effective environment for guiding a child through its ZPD. This may be because these settings encourage children to use language, provide explanations, and work cooperatively or competitively, all of which help produce cognitive change (Pine, 1999).

Vygotsky defines intelligence as the capacity to learn from instruction. Rather than teachers playing an *enabling* role, Vygotsky believes they should guide pupils in paying attention, concentrating, and learning effectively (a *didactic* role: Sutherland, 1992). By doing this, teachers scaffold children to competence.

Box 34.10 Vygotsky and the National Curriculum

In the UK, the past 20 years have seen an almost complete U-turn in educational policy and practice. The emphasis has shifted from *child-centred* to *curriculum-centred* education (Davis, 2003).

- The Plowden Report (1967) ('Children and their primary schools') stated that 'at the heart of the educational process lies the child'. In the mid-1980s, the then Secretary of State for Education declared that 'at the heart of the educational process lies the curriculum'.
- These two views can be seen as reflecting Piaget and Vygotsky's theories, respectively.

- The Education Reform Act 1988 introduced a compulsory National Curriculum (NC) for all 5–16-year-olds in England and Wales. English, maths and science were identified as 'core' subjects, and *attainment targets* were specified (descriptions of the knowledge children should have acquired as they work through the system). These targets at *key stages* provide the benchmark for assessment at ages 7, 11, 14 and 16.
- Assessment involves *criterion referencing* (as opposed to *norm referencing*) – that is, measuring a child's performance relative to a specified criterion (a given attainment target). The assessment tests are 'standard assessment tasks' (SATs).
- Sutherland (1992) argues that Vygotsky didn't:

  ... advocate mechanical formal teaching where children go through the motions of sitting at desks and passing exams that are meaningless to them ... On the contrary, Vygotsky stressed intellectual development rather than procedural learning ...

- Vygotsky rejected any approach advocating that teachers have rigid control over children's learning. Rather, as with Piaget, teachers' control over children's activities is what counts. Teachers extend and challenge children to go beyond where they otherwise could have.

BRUNER'S THEORY

Similarities and differences between Bruner, Piaget and Vygotsky

Bruner has helped to extend Vygotsky's ideas, and to apply them in the context of education (for example, the concept of scaffolding: see above). Bruner has also been influenced by Piaget, and they share certain basic beliefs, in particular that:

- children's underlying cognitive structures mature over time, so that they can think about and organise their world in an increasingly complex way
- children are actively curious and explorative, capable of adapting to their environment through interacting with it. Abstract thinking grows out of action: competence in any area of knowledge is rooted in active experience and concrete mental operations.

However, there are also some basic areas of disagreement between Bruner and Piaget, stemming from Vygotsky's influence. In particular, Bruner stresses the role of language and interpersonal communication, and the need for active involvement by expert adults (or more knowledgeable peers) in helping the child to develop as a thinker and problem-solver. Language plays a crucial part in the scaffolding process. He also sees instruction as an essential part of the learning process, both in naturalistic and educational settings.



Jerome Bruner (born 1915)

Modes of representation

Unlike Piaget, Bruner (1966) doesn't identify stages of development as such. Instead, he describes three *modes of representing the world,* different forms that our knowledge and understanding can take. He isn't, therefore, concerned exclusively with cognitive growth but also with knowledge in general. The three modes are the *enactive, iconic,* and *symbolic,* which develop in that order.

The enactive mode

At first, babies represent the world through *actions.* Any knowledge they have is based upon what they've experienced through their own behaviour (this corresponds to Piaget's *sensorimotor stage*). Past events are represented through appropriate motor responses. Many of our motor schemas, such as 'bicycle riding, tying knots, aspects of driving, get represented in our muscles, so to speak', and even when we have the use of language, it's often extremely difficult to describe in words how we do certain things.

ASK YOURSELF...

- Try describing how to tie a shoelace.

Through recurrent events and environmental conditions, we build up virtually automatic patterns of motor activity which we 'run off' as units in the appropriate situation. Like Piaget, Bruner sees the onset of *object permanence* as a major *qualitative* change in the young child's cognitive development.

The iconic mode

An icon is an *image,* so this form of representation involves building up mental images of things we've experienced. Such images are normally composite, that is, made up of a number of past encounters with similar objects or situations.

ASK YOURSELF...
- To which stage(s) of Piaget's theory does the iconic mode correspond?

This mode corresponds to the last six months of the sensorimotor stage (where schemas become interiorised) and the whole of the *pre-operational* stage, where the child is at the mercy of what it perceives in drawing intuitive conclusions about the nature of reality: things are as they *look*.

The symbolic mode

Bruner's main interest was in the *transition* from the iconic to the symbolic mode. He and Piaget agree that a very important cognitive change occurs at around 6–7 years. For Piaget, this is the start of *logical operations* (albeit tied to concrete reality), while Bruner sees it as the appearance of the *symbolic mode*. Language comes into its own as an influence on thought. The child is now freed from the immediate context and is beginning to be able to 'go beyond the information given' (Bruner, 1957).

KEY STUDY 34.5 The transition from iconic to symbolic modes (Bruner & Kenney, 1966)

- Bruner and Kenney arranged nine plastic glasses in a 3 x 3 matrix (as shown in Figure 34.9). Three- to seven-year-olds were familiarised with the matrix.
- The glasses were then scrambled, and the children were asked to put them back as they were before (the *reproduction task*). In the *transposition task*, the glasses were removed from the matrix, and the glass which had been in the bottom right-hand square was placed in the bottom left-hand square; the child had to rebuild the matrix in this transposed manner.

ASK YOURSELF...
- Which task would you expect children to find easier – and why?

- Children generally could reproduce it earlier than they could transpose it. The reproduction task involves the *iconic mode* (60 per cent of the five-year-olds could do this, 72 per cent of the six-year-olds, and 80 per cent of the seven-year-olds). But the transposition task involves the *symbolic mode* (the results were 0 per cent, 27 per cent and 79 per cent, respectively).
- Clearly, the five-year-olds were dominated by the visual image of the original matrix, while the six- to seven-year-olds translated their visual information into the symbolic mode. They relied upon verbal rules to guide them, such as, 'It gets fatter going one way and taller going the other'. So, a child using images but not symbols can reproduce but not restructure.

Applying Bruner's theory to education

The 'spiral curriculum'

Bruner's modes of representation lie at the heart of the *'spiral curriculum'*, according to which the principles of a subject come to be understood at increasingly more complex levels of difficulty. Like Vygotsky, Bruner was unhappy with Piaget's concept of 'readiness', and proposed a much more active policy of intervention, based on the belief that 'any subject can be taught effectively in some intellectually honest form to any child at any stage of development' (Bruner, 1966).

Educators need to provide learners with the means of grasping the structure of a discipline, that is, the underlying principles and concepts (rather than just mastering factual information). This enables learners to go beyond the information given, and develop ideas of their own. Teachers also need to encourage learners to make links, and to understand the relationships within and between subjects (Smith *et al.*, 1998).

INFORMATION-PROCESSING THEORIES

According to Bee (2000), it's more accurate to talk of the information-processing (IP) *approach* than a distinct IP theory of cognitive development. This approach grew out of, and in some ways represents a reaction to, Piaget's theory (Pine, 1999). Like Piaget, IP theorists believe there are psychological structures in people's minds that

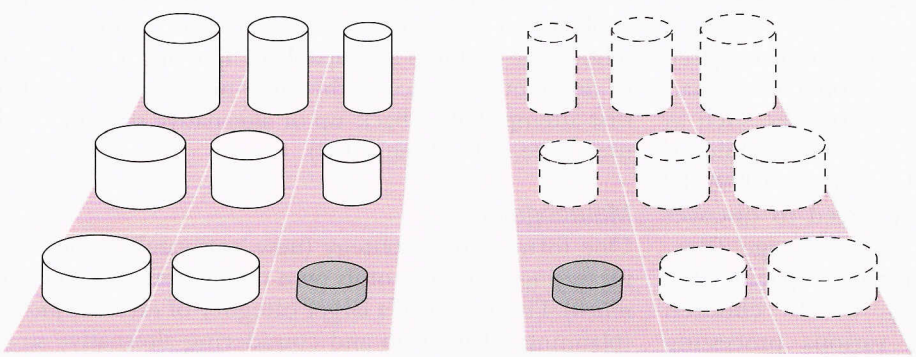


Figure 34.9 The two arrangements of glasses used by Bruner & Kenney (1966)

explain their behaviour, and which are essentially independent of the individual's social relationships, social practices, and cultural environment (Meadows, 1995).

Box 34.11 How different are Piaget's and the IP approaches?

- IP theorists can explain cognitive development (the child makes better and more efficient use of basic cognitive processes) *without* having to assume any global reorganisation of the cognitive system (*qualitatively different stages*) as proposed by Piaget. For example, based on research using Piagetian-type tasks, Siegler (1976) claims that what changes as children develop is their acquisition of increasingly complex rules for problem-solving.
- Consistent with Piaget's theory, Siegler's research suggests that there's a sequence in children's acquisition of new strategies, but this is still very different from identifying developmental stages. Nevertheless, we shouldn't assume that a child either has or doesn't have a particular strategy in its repertoire at any time. When learning a new strategy in maths, for example, a child may forget to use it all the time, or fail to see that it can be applied to new problems. One important developmental change is knowing where and when to use new strategies (Siegler, 1989). This is related to *metacognition* (see text below).
- IP accounts see development unfolding in a *continuous* way (more like Vygotsky than Piaget). When the child is able to move from pre-operational to concrete operational thinking (for example, can conserve), its *processing capacity* has increased: s/he can now hold two things in mind simultaneously. So, what underlies the apparent *qualitative* change in thinking is actually a *quantitative* change in processing capacity (Slater *et al.*, 2003).
- According to Bee (2000), some of the changes Piaget attributed to new mental structures can be more simply explained in terms of increased *experience with tasks and problems*, and *faster and more efficient processing* of information (again, all *quantitative* changes). At the same time:

There also seems to be a real qualitative change in the complexity, generalisability, and flexibility of strategies used by the child.

Underlying the IP approach is the *computer analogy* (see Chapters 2, 17 and 20). This examines more closely than Piaget's theory how major cognitive processes, such as memory and attention, come into play when children deal with particular tasks and problems (Pine, 1999). To understand cognitive *development*, we need to discover what changes in any systematic way with age (Bee, 2000). Is it the system's basic storage capacity that increases (a 'hardware' difference), or do children become more efficient in using various processing strategies (a 'software' difference)? Of course, *both* types of change might be involved: brain growth occurs which, in turn, allows more functional development. But, at present, we know rather more about the *how* of change than the *why* (Schaffer, 2004).

To study the claim that children become better information-processors as they develop, IP theorists use *task analysis*.

Box 34.12 Task analysis

To understand why children cannot solve problems that adults can, we need to understand a particular task's *component steps* (Oakhill, 1984). For example, five elements are necessary to solve the following problem: 'If Ann is not as bad as Betty, and Betty is not as bad as Carole, who is the best?'

1. The child must perceive and encode the important statements (premises) contained in the question, which involves *attending* to it (see Chapter 13).
2. The premises must be stored in *working memory* (WM: see Chapter 17).
3. They must be combined in memory to form an *integrated representation*.
4. The question must be *encoded*.
5. The representation of the premises must be *scanned* to answer the question or formulate a *conclusion* about it.

IP theorists argue that children fail to solve such problems correctly because of errors in encoding the problem, being unable to hold information in memory for long enough, or because holding it in memory may interfere with other task performance (Trabasso, 1977).

Keeney *et al.* (1967) gave children of different ages a series of pictures to remember. Before being tested on recall, most eight- to-ten-year olds could be seen mouthing the picture series (*rehearsal*), while the five-year-olds didn't do this. Although the younger children recalled far fewer items than the older children, they could be taught the rehearsal strategy and then performed as well as the older children. So, their memory was just as good, but they didn't use it as efficiently as the older children.

A large amount of research has found that as children grow, they acquire more and more powerful strategies for remembering, use them more efficiently and flexibly, and apply them to an increasing variety of problems. Also, school-age children are capable of applying a wider range of different strategies to the same problem, so that if the first attempt fails, a back-up or alternative strategy can be used (Bee, 2000; Pine, 1999).

Metacognition

One form of new strategy (new 'software') is the child's increasing awareness of its own mental processes (*metacognition*). This is part of a larger category of *executive processes* (planning what to do and considering alternative strate-

gies). It may be precisely such metacognitive/executive skills that gradually emerge with age. Performance on a whole range of tasks will be better if the child can monitor its own performance, and recognise when a particular strategy is required or not. This self-monitoring improves fairly rapidly, beginning at school age (Bee, 2000).

According to Pascual-Leone (1980) and Case (1985), children don't use just one cognitive strategy in solving Piagetian tasks (as Piaget believed), but several: just how many is correlated with a problem's difficulty. Like Oakhill (1984), Pascual-Leone and Case also see WM as storing the information necessary to solve problems. The amount of memory space necessary is also correlated with the problem's complexity and, as the child develops, so available memory space increases. Certain strategies also become *automatic* with practice, and so require less space in memory (see Chapter 17). An adult, for example, would instantly 'see' that (10 + 6) – (10 + 6) equals zero. A child, however, would require time to solve this problem, since each component must be stored in memory before a solution can be reached.

Applying IP theories to education

One strength of the IP approach is its emphasis on memory and young children's limited capacity to process information. As well as memory's importance in the child's ability to operate effectively, knowledge also has a considerable influence on learning, and the more children know about a situation, the more successfully they'll deal with it. As Sutherland (1992) has noted:

> One of the teacher's main roles is to help children find strategies for reducing their memory load – for instance to write down a list of the facts they need to solve a maths problem.

While young children can add numbers together when two digits are involved (e.g. 22 + 56), they make errors when three digits are used (Van Lehn, 1983). For example, faced with the problem:

```
231  +
 42
```

young children tend either to ignore the third column and arrive at 73 as the answer, or to muddle up the hundreds and tens columns to produce 673. Van Lehn uses the term *repair* to refer to the process by which addition involving three digits can be successfully achieved. This process implies a teacher-led approach to teaching mathematics. However, IP theories also see metacognition as playing a vital role. In the case of learning to read, the child needs to be aware of which words it knows and doesn't know, which sentences it understands and doesn't understand, and how to get the information it needs. A variety of research shows that younger and poorer readers are less skilled at all these metacognitive tasks compared with older and better readers (Flavell *et al.*, 1993: see Chapter 40).

CONCLUSIONS

Piaget's theory revolutionised the way that cognitive development has been investigated and understood. Both Vygotsky's theory and the IP approach challenge some of Piaget's basic assumptions, but they adopt radically different views from each other as to what cognitive development involves. While Vygotsky emphasises the social nature of cognitive change, both Piaget and the IP approach see development as occurring quite *independently* of social interaction. Bruner's theory reflects the influence of both Piaget and Vygotsky. All four theories have contributed to our understanding of the education of young children.

CHAPTER SUMMARY

- Piaget sees **intelligence** as **adaptation to the environment**, and he was interested in how intelligence changes as children grow (**genetic epistemology**). Younger children's intelligence is **qualitatively different** from that of older children.
- **Cognitive development** occurs through the **interaction** between innate capacities and environmental events. It progresses through a series of **hierarchical**, **invariant** and **universal stages**: the **sensorimotor**, **pre-operational**, **concrete operational** and **formal operational** stages.
- Underlying cognitive changes are **functional invariants**, the most important being **assimilation**, **accommodation** (which together constitute **adaptation**) and **equilibration**. The major cognitive structures that change are **schemas/schemata**.
- During the **sensorimotor stage**, frequent interaction with objects ultimately leads to **object permanence**, which is fully developed when the child can infer **invisible displacements**.
- By the end of the sensorimotor stage, schemas have become '**interiorised**'. **Representational/make-believe play**, like **deferred imitation**, reflects the **general symbolic function**.
- **Pre-operational children** have difficulty in **seriation tasks** and also display **syncretic thought**, **transductive reasoning**, and **animism**. **Centration** is illustrated by the **inability to conserve**. Pre-operational children are also **egocentric**.
- During the **concrete operational stage**, logical operations can be performed only in the presence of actual or observable objects. Some types of conservation appear before others (**horizontal décalage**), and a child who's mastered all kinds of classification but not all kinds of conservation displays **vertical décalage**.
- **Formal operational thinkers** can manipulate **ideas** and **propositions** ('second order' operations) and think **hypothetically**.
- Four- and five-year-olds are capable of **perspective-taking**, enabling them to attribute **false beliefs** to

other people. This is a crucial feature of the child's **theory of mind**.

- While basic cognitive processes may be **universal**, how these are brought to bear on specific contents is influenced by **culture**.
- Piaget's stage theory is a **domain-general** theory, which many psychologists more recently have rejected in favour of **domain-specific** approaches.
- Central to Piagetian views of the educational process is **active self-discovery/discovery learning**. Teachers assess each individual child's current stage of cognitive development to set intrinsically motivating tasks, and provide learning opportunities that create disequilibrium.
- According to Vygotsky, the initially helpless baby actively **internalises** problem-solving processes through **interaction with parents**. Vygotsky's **child apprentice** acquires cultural knowledge and skills through **graded collaboration** with those who already possess them (**scaffolding**).
- The most useful assistance a mother can give her child with task performance is to use general instruction initially until the child experiences difficulties, then give more specific instruction. This relates to Vygotsky's **zone of proximal development** (ZPD).
- For Vygotsky, intelligence is the capacity to learn from instruction. Teachers perform a **didactic role**, guiding pupils in paying attention, concentrating, and learning effectively. In this way, children are scaffolded.
- Bruner shared Piaget's belief that abstract thinking grows out of **action.** He was also influenced by Vygotsky's ideas and stressed the **role of language** in the scaffolding process, and the need for the active involvement of more expert others.
- Bruner identifies three **modes of representation**, the **enactive**, **iconic** and **symbolic**. He stressed the transition from iconic to symbolic at ages six to seven, seeing logical thought as dependent on language. This implies that language training can speed up cognitive development.
- **Information-processing** (IP) theories are based on the **computer analogy**. **Task analysis** is used to study the development of children's 'mental programs' and strategies for processing information.
- While children appear to acquire new strategies in a particular sequence, this isn't equivalent to a Piagetian stage. Nevertheless, children can be inconsistent when using new strategies. Improvement with age is related to improved monitoring of performance (part of **metacognition**).
- Emphasis on **memory** and young children's **limited IP capacity** can explain why they're poorer at tasks involving memorising and reading. Storing knowledge linguistically is a vital prerequisite of successful IP performance. Teachers have a crucial role to play in helping children to find strategies for reducing memory load.

Links with other topics/chapters

- The inability to engage in representational/make-believe play, and the general inability to use imagination, is a characteristic of *autistic children* (Chapter 40).
- Piaget and Inhelder's very strong views have stimulated an enduring surge of research on egocentrism and perspective-taking (Siegal, 2003). Its 'modern' form is *theory of mind* (ToM) research, especially in relation to *autism* (Chapter 40).
- How children from *non-western cultures* perform on conservation tasks originally designed for Swiss samples will depend on the familiarity of the materials used, how the instructions are communicated, and the child's grasp of 'being tested' (Schaffer, 2004) (Chapter 47)
- The issue of whether development is best understood in terms of stages doesn't apply just to children. In fact it becomes arguably more relevant and controversial in relation to *adulthood* (Chapter 38). The related issue of *continuity/discontinuity* of development is especially relevant in understanding the impact of *early experience on later behaviour/personality* (Chapter 32).
- According to Moghaddam (2002), stage models are compatible with, and supportive of, the ideal of self-contained *individualism* that's so central to US culture – and, through that, becoming so influential throughout the world. Such models typically depict development as primarily dependent on factors *within* the individual, with social factors playing little/no part. This makes them *culturally biased* (Chapter 47).
- The reduction of egocentrism through peer interaction has major implications for children's *moral development* (Chapter 35).
- Evidence exists to show that children's individual learning may be enhanced without direct interaction with peers, but simply having peers present in the same room performing the same task (Davis, 2003). This describes *social facilitation* through the *co-action effect* (Chapter 31).
- A major difference between Piaget and Vygotsky concerns the importance they attached to *language's influence on cognitive development* (Chapter 18).
- Bruner's concept of 'going beyond the information given' is important for understanding *indirect theories of perception* (such as Gregory's) (Chapter 15).
- A way of evaluating the IP approach is to consider the debate between supporters of *soft and hard artificial intelligence* (AI) (Chapter 20).
- Impaired executive functioning is one proposed explanation of *autism* (Chapter 40).

Freud's psychoanalytic theory
- The psychic apparatus
- Psychosexual development
- The Oedipus complex, identification and the superego
- An evaluation of the Oedipus complex

Cognitive–developmental theories
- Piaget's theory
- Understanding rules
- Moral judgement and punishment
- An evaluation of Piaget's theory
  - *Challenges to Piaget's claims regarding intention*
  - *Cross-cultural validity*
- Kohlberg's theory
- An evaluation of Kohlberg's theory
  - *Is it culturally biased?*
  - *Is it gender biased?*
- Eisenberg's theory of prosocial moral reasoning
- An evaluation of Eisenberg's theory

Social learning theory
- Some important similarities and differences between SLT and orthodox learning theory
- Reinforcement as information about the future
- The role of cognitive factors in observational learning
- An evaluation of Bandura's SLT
  - *Is SLT a developmental theory?*

Conclusions

Chapter summary

Links with other topics/chapters

35

MORAL DEVELOPMENT



INTRODUCTION AND OVERVIEW

At birth, we're *amoral*, lacking any system of personal values and judgements about right and wrong. By adulthood, though, most of us possess morality. Psychologists aren't interested in morality as such, but in the process by which it's acquired. The nature of that process is seen very differently by different psychological theories, which attempt to answer quite different questions.

According to Haste *et al.* (1998), historically four main questions have been asked about moral development.

1. How do conscience and guilt develop, acting as sanctions on our misdeeds? This relates to Freud's *psychoanalytic theory*.
2. How do we come to understand the basis of rules and moral principles, so that we can make judgements about our own and others' behaviour? This relates to the *cognitive–developmental theories* of Piaget, Kohlberg, and Eisenberg.
3. How do we learn the appropriate patterns of behaviour required by our culture? This relates to *learning theories*, including Bandura's *social learning theory*.
4. How do we develop the moral emotions that motivate our concern for others? Eisenberg's theory is also relevant here.

The relationship between morality and human nature has been debated by philosophers for thousands of years. According to Rousseau (1762), humans are 'naturally' good, but this natural goodness may be constrained and distorted by external factors. Only sociobiologists (such as Wilson, 1975: see Chapter 2) among modern-day scientists agree with this view of morality as innate. While we may like to believe that our actions are governed by higher moral principles, the reality is that 'The genes hold culture on a leash' (Wilson: see Chapter 30).

In contradiction of Wilson's claims, all the major theories to be discussed in this chapter share the assumption that the acquisition of morality is part of the wider process of *socialisation*. In other words, morality develops according to the same principles which govern the development of other aspects of socialised behaviour (see Chapter 2).

FREUD'S PSYCHOANALYTIC THEORY

Freud's account of moral development is closely related to other aspects of his psychoanalytic theory, in particular the *structure of the personality* and the *stages of psychosexual development*.

The psychic apparatus

Freud believed that the personality (or *psychic apparatus*) comprises three parts, the id, ego and superego (see Figure 35.1).

- The *id:*

  ... contains everything that is inherited, that is present at birth, that is laid down in the constitution – above all, therefore, the instincts ... (Freud, 1923)

  The wishes and impulses arising from the body's needs build up a pressure or tension (*excitation*), which demands immediate release or satisfaction. Since the id's sole aim is to reduce excitation to a minimum, it's said to be governed by the *pleasure principle*. It is – and remains – the infantile, presocialised part of the personality. The two major id instincts are sexuality and aggression (see Chapter 29).
- The *ego* is:

  ... that part of the id which has been modified by the direct influence of the external world ... (Freud, 1923)

  It can be thought of as the 'executive' of the personality, the planning, decision-making, rational, and logical part of us. It enables us to distinguish between a wish and reality (which the id cannot do), and is governed by the *reality principle*. While the id demands immediate gratification of our needs and impulses, the ego will postpone satisfaction until the appropriate time and place (*deferred gratification*):

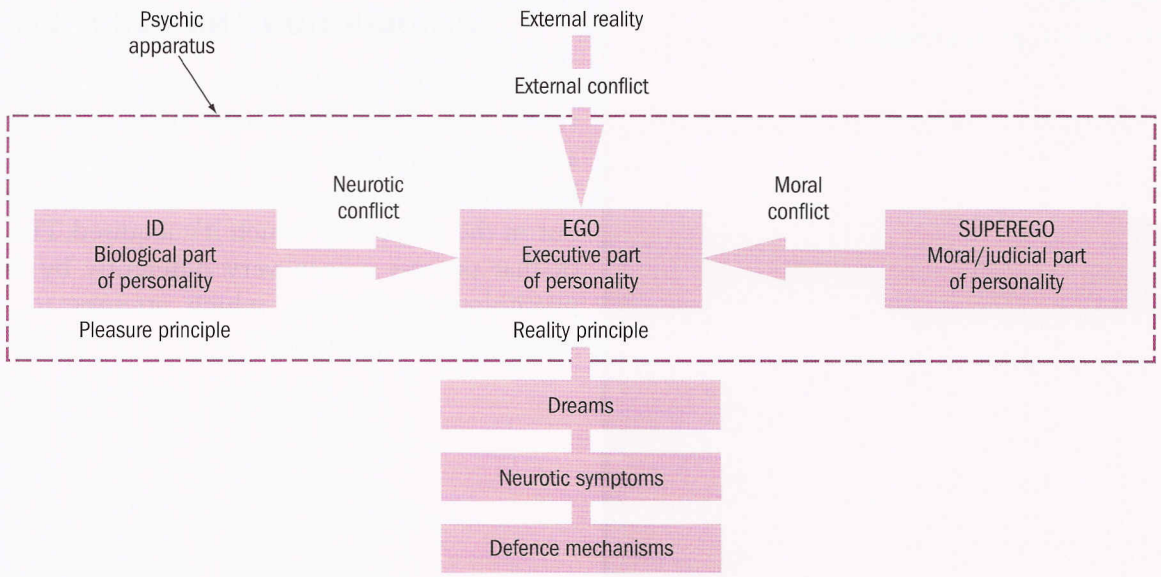


Figure 35.1 The psychic apparatus, showing sources of conflict and ways of resolving it

> The ego seeks to bring the influence of the external world to bear upon the id and its tendencies ... For the ego, perception plays the part which in the id falls to instinct. The ego represents ... reason and common sense, in contrast to the id, which contains the passions ... (Freud, 1923)

◎ Not until the *superego* has developed can we be described as moral beings. It represents the *internalisation* of parental and social moral values:

> It observes the ego, gives it orders, judges it and threatens it with punishment, exactly like the parents whose place it has taken ... (Freud, 1933)

It is in fact the *conscience* which threatens the ego with punishment (in the form of guilt) for bad behaviour, while the *ego-ideal* promises the ego rewards (in the form of pride and high self-esteem) for good behaviour. These correspond to the punishing and rewarding parents respectively.

Psychosexual development

Although the id, ego and superego develop within the individual in that order, this isn't strictly part of Freud's developmental theory. According to his theory of *infantile sexuality,* sexuality isn't confined to physically mature adults, but is evident from the moment of birth. So, babies and young children have sexual experiences and are capable of sexual pleasure, which is derived from the rhythmical stroking or stimulation of any part of the body. However, different parts of the body (the *erogenous zones*) are particularly sensitive at different times during infancy and childhood, and become the focus of sexual pleasure (and frustration).

The sequence of these psychosexual stages is determined by *maturation* (it's biologically programmed), but how a child is treated by others (especially the parents) is crucial. Either excessive gratification or extreme frustration can result in an individual getting emotionally 'stuck' (*fixated*) at the particular stage at which this occurs, producing associated *adult personality traits.* For example, *anal retentive traits* include parsimony (miserliness) and obstinacy.

Box 35.1 Freud's stages of psychosexual development

- **Oral stage (0–1 year):** The nerve-endings in the mouth and lips are highly sensitive, and the baby derives pleasure from sucking for its own sake (*non-nutritive sucking*). In the earlier *incorporative substage,* the major oral activities are sucking, swallowing and mouthing. In the later *biting/aggressive substage,* hardening gums and erupting teeth make biting and chewing sources of pleasure.
- **Anal stage (1–3 years):** The anal cavity and sphincter muscles of the bowel are now the main sources of pleasure. In the earlier *expulsion substage,* the child undergoes potty-training and so has its first encounter with external restrictions on its wish to defecate where and when it pleases. Parental love is no longer unconditional, but now depends on what the child does. In the later *retention substage,* parents come to be seen for the first time as authority figures:

  > By producing them [the contents of the bowels] ... [the infant] can express his active compliance with his environment, and by withholding them, his disobedience ... (Freud, 1905)

- **Phallic stage (3–5/6 years):** Sensitivity is now concentrated in the genitals, and masturbation (in both sexes) becomes a new source of pleasure. The child becomes aware of anatomical sex differences ('*phallic*' comes from the Greek word *phallus* meaning penis), which marks the beginning of the Oedipus complex. The name derives from the classical Greek tragedy *Oedipus Rex,* in which Oedipus kills his father and marries his mother. Both boys and girls experience conflicting emotions in relation to their same- and opposite-sex parents, and how successfully these conflicts are resolved is crucial for future personality development. The child's *superego* and *sex role* are acquired through resolution of the Oedipus complex.



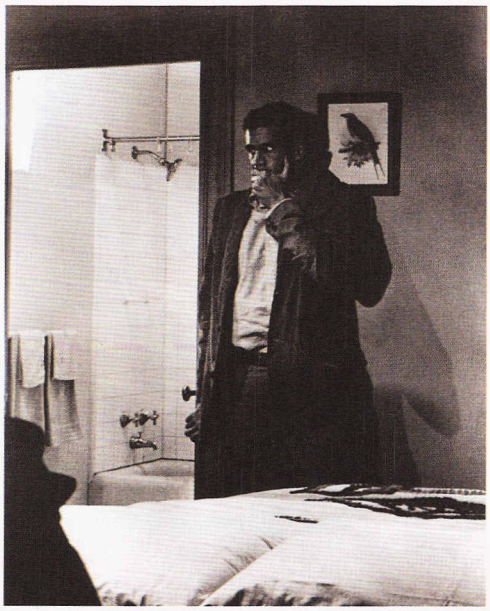
A scene from Pasolini's (1967) film of Sophocles' Greek tragedy, *Oedipus Rex*, who unknowingly kills his father and marries his mother

- **Latency period (5/6 to puberty):** The sexual preoccupations of the earlier years are *repressed* (made unconscious), which allows the child's energies to be channelled into developing new skills and acquiring new knowledge. The balance between the id, ego and superego is relatively greater than at any other time in the child's life.
- **Genital stage (puberty–maturity):** Latency represents the calm before the storm of puberty, which marks the beginning of adolescence. The relative harmony within the child's personality is disrupted by the id's powerful new demands in the form of heterosexual desires.

The Oedipus complex, identification and the superego

A boy, like a girl, takes his mother as his first love-object (see Chapter 32). Starting at about three, a boy's love for his mother becomes increasingly passionate, and he doesn't wish to share her with anyone. The boy is also jealous of his father, who already 'possesses' her, and wants him out of the way ('dead'), so that he can have his mother all to himself. However, his father is bigger and more powerful than he is, and he eventually becomes afraid that his father will punish him by cutting off his penis (*fear of castration/castration anxiety*). He reaches this conclusion partly as a result of previous punishments for masturbation, and partly based on his observation that females don't have a penis.

To resolve the dilemma, the boy *represses* his desire for his mother and his hostile feelings for his father, and *identifies* with his father (he comes to act, think and feel as if he were his father). Through this *identification with the aggressor,* a boy acquires the superego and the male sex role (see Chapter 36).



Norman Bates (Anthony Perkins), the main character in Hitchcock's *Psycho*, identifies very strongly with his dead mother. He attempts, unconsciously, to 'keep her alive' by, for example, dressing up in her clothes

As for the girl, her Oedipus complex (sometimes referred to as the *Electra complex*) begins with the belief that she's already been castrated. She blames her mother for her lack of a penis, and experiences penis envy (she wants what males have). But she eventually realises that this is unrealistic, and substitutes the wish for a penis with the wish for a baby. This causes her to turn to her father as a love-object, in the hope that he'll provide her with a (preferably male) baby.

In order to identify with the mother, the girl must give up her father as a love-object and move back to her mother (while boys only have to make one 'move', from the mother to the father). However, Freud was much less sure about *why* the girl identifies with the mother than he was about the boy's motive for identifying with the father. The stronger the motive, the stronger (or more complete) the identification, which in turn makes for a stronger superego. So, boys' fear of castration is associated with a strong identification with the father (the 'aggressor') and a strong superego. As Freud (1924) says:

> The fear of castration being thus excluded in a little girl, a powerful motive also drops out for the setting up of a superego.

One suggestion Freud made was that the girl may fear loss of the mother's love. To keep the mother 'alive' inside her, she internalises her, becoming the 'good' child that her mother would want her to be (*anaclitic identification*). But what he was quite sure about was that identification with the mother is less complete. The girl's love for her father doesn't have to be as thoroughly abandoned as the boy's for his mother, and her Oedipus complex doesn't have to be so completely shattered (Mitchell, 1974). Consequently, females have a weaker superego and their identity as separate, independent persons is also less well developed.

ASK YOURSELF...

- Do you agree with Freud regarding females' moral inferiority?

CRITICAL DISCUSSION 35.1: Are females morally and sexually inferior to males?

- Because her identification with the mother is less complete, the girl relies more on external authority figures throughout her childhood, and has to be more compliant, and less 'naughty' (there's no equivalent of 'boys will be boys'). It's through his strong identification with the father that the boy achieves independence, which the girl will have to try to achieve in adolescence. According to Mitchell (1974):

> Many women, though nominally they leave home, understandably, never make it.

- But there's little evidence to support this view. For example, Hoffman (1975) reviewed several studies in which children were left alone and tempted to violate a prohibition (such as looking round to see a toy placed on a table behind them). There were usually no overall gender differences, but, if anything, girls were *better* able to resist temptation than boys were.
- As we noted earlier, Freud saw women as having to make do with babies as penis-substitutes, a view that has aroused fierce criticism, particularly from feminist psychologists (see Chapter 47). For example, Horney

(1924) and Thompson (1943), both eminent psychoanalysts, argued that what girls (and women) envy isn't the penis as such, but males' superior social status (the penis is a *symbol* for male privilege). Moreover, it's men, not women, who equate lack of a penis with inferiority!

An evaluation of the Oedipus complex

- Critical Discussion 35.1 has considered some of the criticisms of Freud's account of sex differences in morality which follows from his theory of the Oedipus complex ('the central phenomenon of the sexual period of early childhood': Freud, 1924).
- Another criticism concerns its potential *cultural bias.* Freud assumed that the Oedipus complex was a universal phenomenon, but even if true for western cultures, the Oedipus complex may not apply to every culture or to all historical periods (Segall *et al.*, 1990).

CROSS-CULTURAL STUDY 35.1

Trobriand Island boys and their fathers (Malinowski, 1929)

- Among the Trobriand Islanders of Papua, New Guinea, boys were traditionally disciplined by their maternal uncle (their mother's brother), rather than by their own biological father. It was an uncle's role to guide his nephew through to adulthood. Such societies are described as *avuncular*.
- However, the father remained the mother's lover. Hence, the two roles (disciplinarian and mother's lover) were adopted by *different* men, whereas in Viennese society at the time that Freud was proposing his theories, the boy's father played *both* roles.
- By explaining the boy's hostility towards the father wholly in terms of sexual jealousy, Freud overlooked the possibility that he resented his father's *power* over him (Segall *et al.*, 1990).
- What Malinowski found was that a Trobriand Island boy's relationship with his father was very good, free of the love–hate ambivalence which is central to Freud's Oedipal theory. By comparison, the relationship with the uncle wasn't usually so good.
- However, this doesn't necessarily mean that Malinowski was right and Freud was wrong (Price & Crapo, 1999). Segall *et al.* (1990) suggest that more societies need to be examined, including both western and avuncular.

- Freud (1909) cited his case study of 'Little Hans' as supporting his Oedipal theory. This five-year-old developed a phobia of being bitten by a horse, which Freud interpreted as a fear of castration (see Chapter 44). A common criticism made of Freud's developmental theory as a whole is that it was based largely on the study of his adult patients. This makes the case of Little Hans especially important, because he was Freud's only child patient.

Freud saw Hans as a 'little Oedipus', having formulated his theory four years earlier (in *Three Essays on the Theory of Sexuality,* 1905). Hence, the case study is biased and provides no independent evidence to support Freud. In addition, Hans's therapy was conducted mainly by his own father, a supporter of Freud's ideas! Even more seriously, perhaps, other psychoanalytic theorists have provided alternative explanations of Hans's fear of horses, including Bowlby (1973) who reinterpreted the case in terms of attachment theory (see Chapter 32).

ASK YOURSELF...

- What kind of independent evidence might be considered valid?
- Why is it a problem that Hans's therapy was conducted by his own father?
- How do you think Bowlby might have reinterpreted Hans's fear of horses?

Bee (2000) maintains that attachment research provides a good deal of support for the basic psychoanalytic hypothesis that the quality of the child's earliest relationships affects the whole course of later development. Both Bowlby (1973) and Erikson (1963: see Chapter 37) regard early relationships as *prototypes* of later relationships. Despite the considerable evidence showing that all types of early privation are reversible (see Chapter 32), and accepting all the criticisms of the Oedipal theory, belief in the impact of early experience is a lasting legacy of Freud's developmental theory.

COGNITIVE–DEVELOPMENTAL THEORIES

According to Haste *et al.* (1998), the question regarding moral rules, principles, and judgements (see *Introduction and overview*) has dominated research on moral development for 30 years, through work within the *cognitive–developmental theoretical framework.* While Kohlberg's theory has been the focus of research during this time, Piaget (1932) pioneered this approach to moral development. Cognitive–developmental theories maintain that it's the reasons *underlying* behaviour, rather than the behaviour itself, which make it right or wrong.

Piaget's theory

Piaget argued that morality develops gradually during childhood and adolescence. While these changes are usually referred to as qualitatively different stages of moral development, Piaget explicitly *didn't* use the concept of developmental stages in relation to moral development. Rather, he differentiated two *types of moral orientation,* namely *heteronomous* and *autonomous* (see Table 35.1, page 607). Instead of seeing morality as a form of cognition, Piaget discussed morality in the context of affects and feelings (Eckensberger, 1999).

Understanding rules

To discover how moral knowledge and understanding change with age, Piaget began by looking at children's ideas about the rules of the game of marbles. He believed that the essence of morality lies in rules, and that marbles is a game in which children create and enforce their own rules free from adult influence. Piaget felt that in this way he could discover how children's moral knowledge in general develops. As he noted:

> Children's games constitute the most admirable social institutions. The game of marbles, for instance, as played by boys, contains an extremely complex system of rules ... that is to say, a code of laws, a jurisprudence of its own ... All morality consists in a system of rules.

Pretending he didn't know the rules, Piaget asked children to explain them to him and, during the course of a game, to tell him who made the rules, where they came from, and whether they could be changed. He found that children aged 5 – 9/10 tended to believe that the rules had always existed in their present form, and that they'd been created by older children, adults, or even God. The rules were sacred, and couldn't be changed in any way (an *external law*). Nevertheless, children unashamedly broke them to suit themselves, and saw nothing contradictory in the idea of both players winning the game.

Children aged 10 and above understood that the rules were invented by children themselves and could be changed, but only if all players agreed. The function of rules was to prevent quarrelling and ensure fair play. They adhered rigidly to the rules, and discussed the finer points and implications of any changes. Piaget called this moral orientation towards cooperation with peers *mutual respect,* which he distinguished from the *unilateral respect* shown by younger children towards adult authority.



According to Piaget, the rules of marbles could be used to study morality, since all morality consists of a system of rules

Moral judgement and punishment

Piaget also told children pairs of stories about (hypothetical) children who'd told lies, stolen or broken something.

Box 35.2 Examples of pairs of stories used by Piaget

Example 1a: A little boy called John was in his room. He was called to dinner and went into the dining room. Behind the door there was a chair and on the chair there was a tray with 15 cups on it. John couldn't have known that the chair was behind the door, and as he entered the dining room, the door knocked against the tray and the tray fell on the floor, breaking all of the cups.

Example 1b: One day, a little boy called Henry tried to get some jam out of a cupboard when his mother was out. He climbed on to a chair and stretched out his arm. The jam was too high up, and he couldn't reach it. But while he was trying to get it, he knocked over a cup. The cup fell down and broke.

Example 2a: A little girl called Marie wanted to give her mother a nice surprise and so she cut out a piece of sewing for her. But she didn't know how to use the scissors properly and she cut a big hole in her dress.

Example 2b: A little girl called Margaret went and took her mother's scissors one day when her mother was out. She played with them for a bit and then, as she didn't know how to use them properly, she made a hole in her dress.

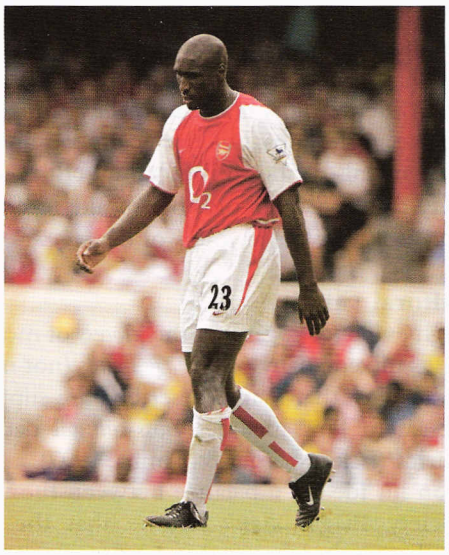
ASK YOURSELF...

- Piaget asked children who they believed was the naughtier and should therefore be punished more.
- Who do you think (a) 5–9/10 year olds and (b) children over 10 judged to be the naughtier?
- Why?

Piaget was more interested in the *reasons* children gave for their answers than the answers themselves. While 5–9/10-year-olds could distinguish an intentional act from an unintentional one, they tended to base their judgements on the severity of the outcome or the sheer amount of damage done. So, John and Marie were typically judged to be naughtier (*objective* or *external responsibility*).

By contrast, children aged 10 or above judged Henry and Margaret to be naughtier, because they were both doing something they shouldn't have been. Although the damage they caused was accidental, older children saw the motive or intention behind the act as being important in determining naughtiness (*internal responsibility*).

Regarding punishment, younger children believed that naughty people should pay for their crimes. In general, the greater the suffering the better, even though the form of punishment might be quite arbitrary. Such *expiatory* ('paying the penalty for') punishment is seen as decreed by authority and accepted as just because of its source



Sol Campbell of Arsenal being sent off. Did the whole team suffer for his moment of recklessness?

(*moral realism*). Thus, when a child in a class doesn't admit to a misdeed and the rest of the class doesn't identify the offender, young children see *collective punishment* (the whole class is punished) as being acceptable.

If someone who's been naughty and 'got away with it' suffers some misfortune, younger children often construed this as a punishment for the misdeed (*immanent justice*). For example, a child who lied but wasn't found out and later fell and broke his arm was being punished for the lie. God (or an equivalent force) is in league with those in authority to ensure that 'the guilty will always be caught in the end'.

By contrast, older children saw punishment as bringing home to the offender the nature of the offence, and as a deterrent to behaving wrongly in the future. They also believed that collective punishment was wrong, and that 'the punishment should fit the crime'. So, if one child stole another one's sweets, the offender must give his/her own sweets to the victim (based on the *principle of reciprocity*) or be punished in some other appropriate way. Older children no longer saw justice as being tied to authority (moral relativism), and there was less belief in immanent justice.

Box 35.3 Heteronomous and autonomous morality

- Piaget called the morality of young children *heteronomous* ('subject to another's laws or rules'). Older children possess *autonomous* morality ('subject to one's own laws or rules'), and see rules as the product of social agreements rather than sacred and unchangeable laws (the *morality of cooperation*).
- Piaget believed that the change from heteronomous to autonomous morality occurred because of the shift at about seven from egocentric to operational thought (see Chapter 34). This suggests that cognitive development is *necessary* for moral development, but since the latter lags at least two years behind the former, it cannot be *sufficient*.
- Another important factor is the change from *unilateral respect* (the child's unconditional obedience of parents and other adults) to *mutual respect* within the peer group (where disagreements between equals have to be negotiated and resolved).

An evaluation of Piaget's theory

- Piaget believed that popular girls' games (such as hopscotch) were too simple compared with boys' most popular game (marbles) to be worthy of investigation. While girls eventually achieve similar moral levels to boys, they're less concerned with legal elaborations. This apparent *gender bias* is also evident in Kohlberg's theory (see below).
- Piaget argued that *egocentrism* could be overcome via *social interaction* with *peers*. Intellectually, and in terms of status, adults are too far removed from children, but peers provide the ideal potential source of *sociological conflict* necessary for development to take place. It's

Table 35.1 Summary of Piaget's theory of moral development

	Understanding rules	Moral judgement and punishment
5–9/10-year-olds: **Heteronomous moral orientation** ('subject to another's laws or rules')	• *Rules represent an external law* • *Unilateral respect*	• *Objective/external responsibility* Belief in: • *expiatory punishment* • *moral realism* • *collective punishment* • *immanent justice*
10-year-olds and above: **Autonomous moral orientation** ('subject to one's own laws or rules')	*Mutual respect*	• *Internal responsibility* Belief in: • *principle of reciprocity* • *moral relativism* No longer believe in: • *collective punishment* • *immanent justice*

through resolution of conflict that cognitive development occurs (see Box 35.3), although there's no *logical* reason why it results in developmental advance (Bryant, 1990). Nevertheless, Piaget's claims have inspired some important research into the potential impact of peer interaction on *perspective-taking* (Davis, 2003: see Chapter 34).



According to Piaget, perspective-taking results partly from interactions with peers, especially when beliefs are challenged

Challenges to Piaget's claims regarding intention

- Children's understanding of intention is much more complex than Piaget believed, and children are able to bring this understanding to bear on moral decision-making. The pre-school child *isn't* amoral (Durkin, 1995).
- Piaget's stories make the *consequences* of behaviour explicit rather than the intentions behind it (Nelson, 1980). When three-year-olds see people bringing about negative consequences, they assume that their intentions are also negative. But when information about intentions is made explicit, even three-year-olds can make judgements about them, *regardless* of the consequences. This suggests they are only less proficient than older children at *discriminating* intentions from consequences, and in using these separate pieces of information to make moral judgements.
- Armsby (1971) found that 60 per cent of six-year-olds (compared with 90 per cent of ten-year-olds) judged the deliberate breaking of a cup as more deserving of punishment than accidental damage to a TV set. This suggests that at least some six-year-olds are capable of understanding intention in the sense of 'deliberate naughtiness', and that a small amount of deliberate damage is naughtier than a large amount of accidental damage.
- According to some information-processing theorists (e.g. Gelman & Baillargeon, 1983: see Chapter 34), aspects of development which Piaget attributed to the increasing complexity and quality of thought, are actually the result of an increasing capacity for the storage and retrieval of information. Most five-year-olds say that John is naughtier because he broke more cups than Henry. This is because they can remember who broke more cups, but they cannot remember all the other details of the stories. When efforts are made to rectify this, five-year-olds often take intention into account, *as well as* the amount of damage.

Cross-cultural validity

- Although evidence regarding the *process* of moral development is mixed, many of the *age trends* (not necessarily the actual ages) that Piaget described are supported by later research. This includes *cross-cultural* data, mainly from Africa (Eckensberger & Zimba, 1997).
- Based on his idea of a balance between the individual and society, Piaget *didn't* assume that the developmental changes he observed in his Swiss sample would necessarily be found in other cultures. On the contrary, he claimed that the essential issue was whether the cultural context would allow certain developmental changes to occur. This general orientation towards *contextualisation* is evident in current cross-cultural research (Eckensberger, 1999), and an interesting example is a study of lying and truth-telling by Lee *et al.* (1997).

CROSS-CULTURAL STUDY 35.2

Lying and truth-telling in China and Canada (Lee *et al.*, 1997)

- Lee *et al.* tested the claim that the understanding of lying is greatly influenced by the cultural norms and values in which individuals are socialised.
- 120 children from the People's Republic of China and 108 Canadian children (aged 7, 9 and 11) were compared. They were presented with four brief stories, two involving a child who intentionally carried out a good deed (valued by adults in both cultures) and two involving a child who carried out a bad deed (viewed negatively by adults in both cultures).
- When the story characters were questioned by a teacher as to who committed the act, they either lied or told the truth. The children were asked to evaluate the story characters' deeds and their verbal statements as either 'naughty' or 'good'.
- Overall, the Chinese children rated truth-telling *less* positively and lie-telling *more* positively in *prosocial settings* compared with the Canadian children.
- This indicates that the emphasis on self-effacement and modesty in Chinese culture overrides Chinese children's evaluations of lying in some situations.
- Both groups rated truth-telling *positively* and lie-telling *negatively* in *antisocial situations*, reflecting the emphasis in both cultures on distinguishing between misdeed and truth/lie-telling.

Lee *et al.*'s results suggest a close link between sociocultural practices and moral judgement in relation to lying and truth-telling. China is a communist–collectivist society, which values the community over the individual and promotes personal sacrifice for the social good. Admitting a good deed is viewed as a violation of both traditional Chinese cultural norms and communist–collectivist doctrine. By contrast, in western culture 'white lies' and deceptions to avoid embarrassment are tolerated, and concealing positive behaviour isn't explicitly encouraged (especially in the early school years).Although cognitive development plays an undeniable role (as argued by Kohlberg: see below), cultural and social factors are also key determinants in children's moral development (Lee *et al.*, 1997).



The People's Republic of China – a communist-collectivist society

Kohlberg's theory

As we noted earlier, Kohlberg's theory has dominated research in the field of moral reasoning for 30 years. Kohlberg was greatly influenced by Piaget, and, like him, believed that morality develops gradually during childhood and adolescence. Also like Piaget, he was more interested in people's *reasons* for their moral judgements than in the judgements themselves. For example, our reasons for upholding the law, as well as our views about whether there are circumstances in which breaking the law can be justified, might change as we develop.

Kohlberg assessed people's moral reasoning through the use of *moral dilemmas.* Typically, these involved a choice between two alternatives, both of which would be considered socially unacceptable. One of the most famous of these dilemmas concerns 'Heinz'.

ASK YOURSELF...

- Read Box 35.4 and try answering the questions about Heinz.

Box 35.4 An example of a moral dilemma

In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $400 for the radium and charged $4000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $2000, which was half of what the drug cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, 'No, I discovered the drug and I'm going to make money from it.' So Heinz got desperate and considered breaking into the man's store to steal the drug for his wife.

1. Should Heinz steal the drug? (Why or why not?)
2. If Heinz doesn't love his wife, should he steal the drug for her? (Why or why not?)
3. Suppose the person dying isn't his wife but a stranger. Should Heinz steal the drug for the stranger? (Why or why not?)
4. (If you favour stealing the drug for a stranger.) Suppose it's a pet animal he loves. Should Heinz steal to save the pet animal? (Why or why not?)
5. Is it important for people to do everything they can to save another's life? (Why or why not?)
6. Is it against the law for Heinz to steal? Does that make it morally wrong? (Why or why not?)
7. Should people try to do everything they can to obey the law? (Why or why not?)
8. How does this apply to what Heinz should do?

(From Kohlberg, 1984)

ASK YOURSELF...

- In July 2004, a 100-year-old man, Bernard Heginbotham, who killed his 87-year-old wife by slitting her throat, avoided a prison sentence because the judge said he had acted out of love. Her health was failing and she'd been moved from one care home to another. He became very distressed and decided to end her suffering.
- Should he have killed his wife?
- Can slitting someone's throat be justified as an act of love?
- Should his age have been taken into account when passing sentence?
- Should he have been sent to prison?

Kohlberg's original study (beginning in 1956) involved 72 Chicago boys (10–16 years), 58 of whom were followed up at three-yearly intervals for 20 years (Kohlberg, 1984; Colby *et al.*, 1983; Colby & Kohlberg, 1987). Based on the answers given by this sample to the Heinz and other dilemmas, Kohlberg identified six qualitatively different stages of moral development, differing in complexity, with more complex types being used by older individuals. The six stages span three *levels* of moral reasoning:

1. at the *preconventional level,* we don't have a personal code of morality – instead, it's shaped by the standards of adults and the consequences of following or breaking their rules
2. at the *conventional level,* we begin to internalise the moral standards of valued adult role models
3. at the *postconventional level,* society's values (such as individual rights), the need for democratically determined rules and *reciprocity* (or *mutual action*) are affirmed (stage 5); in stage 6, individuals are guided by *universal ethical principles,* in which they do what their conscience dictates, even if this conflicts with society's rules.

Box 35.5 Kohlberg's three levels and six stages of moral development and their application to the Heinz dilemma

Level 1: Preconventional morality

Stage 1 (punishment and obedience orientation): What's right and wrong are determined by what is and isn't punishable. If stealing is wrong, it's because authority figures say so and will punish such behaviour. Moral behaviour is essentially the avoidance of punishment.

- Heinz *should* steal the drug. If he lets his wife die, he'd get into trouble.
- Heinz *shouldn't* steal the drug. He'd get caught and sent to prison.

Stage 2 (instrumental relativist orientation): What's right and wrong are determined by what brings rewards and what people want. Other people's needs and wants are important, but only in a reciprocal sense ('If you scratch my back, I'll scratch yours').

- Heinz *should* steal the drug. His wife needs it to live and he needs her companionship.
- Heinz *shouldn't* steal the drug. He might get caught and his wife would probably die before he got out of prison, so it wouldn't do much good.

Level 2: Conventional morality

Stage 3 (interpersonal concordance or 'good boy–nice girl' orientation): Moral behaviour is whatever pleases and helps others and doing what they approve of. Being moral is 'being a good person in your own eyes and the eyes of others'. What the majority thinks is right by definition.

- Heinz *should* steal the drug. Society expects a loving husband to help his wife regardless of the consequences.
- Heinz *shouldn't* steal the drug. He'll bring dishonour on his family and they'll be ashamed of him.

Stage 4 (maintaining the social order orientation): Being good means doing one's duty – showing respect for authority and maintaining the social order for its own sake. Concern for the common good goes beyond the stage 3 concern for one's family: society protects the rights of individuals, so society must be protected by the individual. Laws are unquestioningly accepted and obeyed.

- Heinz *should* steal the drug. If people like the druggist are allowed to get away with being greedy and selfish, society would eventually break down.
- Heinz *shouldn't* steal the drug. If people are allowed to take the law into their own hands, regardless of how justified an act might be, the social order would soon break down.

Level 3: Postconventional morality

Stage 5 (social contract–legalistic orientation): Since laws are established by mutual agreement, they can be changed by the same democratic process. Although laws and rules should be respected, since they protect individual rights as well as those of society as a whole, individual rights can sometimes supersede these laws if they become destructive or restrictive. Life is more 'sacred' than any legal principle, and so the law shouldn't be obeyed at all costs.

- Heinz *should* steal the drug. The law isn't set up to deal with circumstances in which obeying it would cost a human life.
- Heinz *shouldn't* steal the drug. Although he couldn't be blamed if he did steal it, even such extreme circumstances don't justify a person taking the law into his own hands. The ends don't always justify the means.

Stage 6 (universal ethical principles orientation): The ultimate judge of what's moral is a person's own conscience operating in accordance with certain universal principles. Society's rules are arbitrary and may be broken when they conflict with universal moral principles.

- Heinz *should* steal the drug. When a choice must be made between disobeying a law and saving a life, one must act in accordance with the higher principle of preserving and respecting life.
- Heinz *shouldn't* steal the drug. He must consider other people who need it just as much as his wife. By stealing the drug, he'd be acting in accordance with his own particular feelings with utter disregard for the values of all the lives involved.

(Based on Rest, 1983; Crooks & Stein, 1991)



Charles Bronson in *Death Wish*: taking the law into his own hands in the most extreme way possible

KEY STUDY 35.1 Distributive justice (Damon, 1977)

- A typical *distributive justice* task involved children being asked to imagine that there's a school in desperate need of funds to buy essential writing materials (pens and notebooks). Teachers organise an open day and fair to raise funds.
- The art teacher asks the class to paint pictures for sale, the open day is a great success and more money is raised than needed. The teacher is given some of the surplus money, and the critical question is: *How does she distribute the money to the children?*
- The three possibilities are: *equality* (each child receives the same amount); *need (poorer* children receive more); and *merit* (those who worked hardest or whose paintings sold best are given more).
- Even four-year-olds recognise the importance of sharing, and eight-year-olds can appreciate and discuss all three ways of sharing the money.

Both Piaget and Kohlberg saw cognitive development as necessary for, and setting a limit on, the maturity of moral reasoning, with the latter usually lagging behind the former. So, for example, formal operational thought (see Chapter 34) is needed to achieve stages 5 and 6, but it cannot *guarantee* it. Because formal operational thought is achieved by a relatively small proportion of people, it's hardly surprising that only about 15 per cent of adults attain stages 5 and 6 (Colby *et al.*, 1983 see Table 35.1).

An evaluation of Kohlberg's theory

- Research has shown that young children's understanding of moral regulation is much more sophisticated than implied by Kohleberg's Stage 1 (Hart *et al.*, 2003). Damon (1977) was one of the first to demonstrate that Stage 1 children reason in thoughtful ways about sharing in peer contexts. Children have considerable experience of sharing food and toys with friends, which is translated into implicit principles. But they have little experience with the kinds of issues raised by Kohlberg's dilemmas. So, their reasoning about theft and the importance of human life is rather muddled. Their moral understanding is, however, much more complex and sophisticated than was believed 30 years ago (Hart *et al.*, 2003).
- Findings from Kohlberg's longitudinal study showed that those who were initially at low stages had advanced to higher stages, suggesting 'moral progression' (Colby *et al.*, 1983). Based on these findings, he argued that the first five stages are *universal,* and that they occur in an *invariant sequence.* Similarly, Rest's (1983) 20-year longitudinal study of men from adolescence to their mid-thirties showed that the

Table 35.2 The relationship between Kohlberg's stages and Piaget's types of moral development, and Piaget's stages of cognitive development

Kohlberg's levels of moral development	Age group included within Kohlberg's developmental levels	Corresponding type of morality (Piaget)	Corresponding stage of cognitive development (Piaget)
Preconventional (stages 1 and 2)	Most 9-year-olds and below. Some over nine	Heteronomous (5–9/10)	Pre-operational (2–7)
Conventional (stages 3 and 4)	Most adolescents and adults	Heteronomous (e.g. respect for the law/authority figures) plus autonomous (e.g. taking intentions into account)	Concrete operational (7–11)
Postconventional (stages 5 and 6)	10–15% of adults, not before mid-30s	Autonomous (10 and above)	Formal operational (11 and above)

developmental stages seem to occur in the order described by Kohlberg.

Is it culturally biased?

- According to Snarey's (1987) review of 45 studies conducted in 27 different cultures, the data 'provide striking support for the universality of Kohlberg's first four stages'. However, Kohlberg & Nisan (1987) studied Turkish youngsters, both from a rural village and a city, over a 12-year period. Their scores overall were lower than Americans', and rural youngsters scored lower than the urban dwellers. Snarey *et al.* (1985) reported that Israeli youngsters (aged 12–24) educated in kibbutzim scored *higher* than Americans at all ages.

These findings suggest that cultural factors play a significant part in moral reasoning. According to the *sociocultural approach,* what 'develops' is the individual's skill in managing the moral expectations of one's culture, expressed through linguistic and symbolic practices. This contrasts sharply with Kohlberg's cognitive–developmental model, which concentrates on individual processes 'inside the head' (Haste *et al.*, 1998).

CROSS-CULTURAL STUDY 35.3

Cultural bias in Kohlberg's theory

- Stage-6 reasoning is based on supposedly 'universal' ethical principles, such as *justice* (which is central to Kohlberg's theory), *equality, integrity,* and *reverence for life*. However, these *aren't* universally held (Shweder, 1991; Eckensberger, 1994).
- For example, South East Asian culture places *family loyalty* at the centre of its ethical system. Shweder *et al.* (1987) gave the Heinz dilemma to people living in Indian Hindu villages. One very morally sophisticated reasoner reached very different conclusions, supported by very different arguments, from that expected in western culture. He was clearly using a high stage of reasoning, but it was impossible to score him on the Kohlberg measure, because his arguments were too far removed from the western position (Shweder, 1990).
- Indian adolescents and adults made frequent reference to notions of *the divine* in their moral justifications, as opposed to the western notion of justice (Shweder *et al.*, 1997).
- Iwasa (1992) compared Americans and Japanese using the Heinz dilemma. There was no difference in the overall level of moral development, but there were qualitative differences in *why* human life was valued, reflecting cultural norms. While Americans were concerned to prolong length of life, the Japanese were concerned to make it purer and cleaner. Hence, most Americans thought Heinz should steal, while most Japanese thought he shouldn't.

- Eckensberger (1999) maintains that Kohlberg's theory isn't as 'western based' as some critics have claimed. For example, the highest stages can be found in India, Taiwan, and Israel. It appears to be the degree of 'complexity' (industrialisation) – and not 'westernisation' – that assists the development to higher stages.

Nevertheless, cultural psychologists believe that instead of looking for universal moral stages, we should be trying to understand moral *diversity.* A focus on justice may be very far from some cultures' primary ethical concerns:

> If the researchers try to measure justice reasoning, rather than eliciting people's usual moral framework, stage scores may be misleading, but more importantly, the results would fail to give a true picture of people's moral lives ... (Haste *et al.*, 1998)

Is it gender biased?

- The claim that Kohlberg's theory is biased towards western cultural ideals (*Eurocentrism*) mirrors a second major criticism, namely that it's biased in favour of males (*androcentrism:* see Chapter 47). Gilligan (1982, 1993) has argued that because Kohlberg's theory was based on an all-male sample, the stages reflect a male definition of morality.

ASK YOURSELF...

- What do you think Gilligan might mean by a 'male definition of morality'?
- How might this differ from a female definition of morality?

- While men's morality is based on abstract principles of law and justice, women's is based on principles of compassion and care. In turn, the different 'moral orientations' of men and women rest on a deeper issue, namely how we think about *selfhood.* An ethic of justice (male) is a natural outcome of thinking of people as separate beings, in continual conflict with each other, who make rules and contracts as a way of handling that conflict. A 'female' ethic of caring/responsibility follows from regarding selves as being in connection with one another.
- However, the claim that women 'think differently' about moral issues has been challenged. According to Johnston (1988), each sex is competent in each mode, but there are gender-linked preferences. While boys tended to use a justice orientation, if pressed they'd also use the care orientation. Similarly, girls preferred a care orientation, but also switched easily. According to Haste *et al.* (1998), these findings support Gilligan's argument that there's more than one moral 'voice', but *not* her claim that the 'caring' voice was more apparent amongst women. Several studies show that sex differences in moral orientations

are less important than the kind of dilemmas being considered.

KEY STUDY 35.2 Are males and females morally different? (Walker, 1989)

- Walker studied a large sample of males and females, aged 5–63. Participants were scored for both moral stage and orientation on both *hypothetical* and *personally generated, real-life dilemmas*. The only evidence of sex differences was for adults on real-life dilemmas.
- When asked to produce real-life dilemmas, females reported more *relational/personal* ones and males reported more *non-relational/impersonal* dilemmas (Walker *et al.*, 1987). A relational/personal conflict involves someone with whom the participant has a significant and continuing relationship (e.g. whether or not to tell a friend her husband was having an affair). A non-relational/impersonal conflict involves acquaintances or strangers (e.g. whether or not to correct a shop assistant's error in giving too much change).
- Regardless of gender, *personal/relational* dilemmas produced a higher level of response than impersonal/non-relational dilemmas. This is the *opposite* of what Gilligan claimed, namely that Kohlberg's stages are biased against an ethic of care (Walker, 1996).
- Both males and females tended to use the ethic of care mostly in personal dilemmas, and most people used both orientations to a significant degree, with no clear focus or preference. According to Walker (1996), the nature of the dilemma is a better predictor of moral orientation than is gender.
- Walker (1984, 1995) also refuted Gilligan's claim that Kohlberg's scoring system was biased against females, making them more likely to be rated at the conventional level, and men at the post-conventional level. Based on a review of all the available research evidence relating to gender differences (80 studies, 152 distinct samples, and over 10,000 participants), he found that, regardless of age category, the typical pattern was one of non-significant differences. Once any educational or occupational differences favouring men were controlled for, there was no evidence of a systematic sex difference in moral stage scores.

◎ The higher stages in Kohlberg's theory are associated with education and verbal ability (Shweder *et al.*, 1987). While 'college-educated' people give higher-level and more mature explanations of moral decisions, this doesn't make them more moral than the non-college-educated. The former might simply be more sophisticated verbally. Nor is postconventional morality necessarily superior to conventional morality (Shweder, 1991), and even Kohlberg (1978) acknowledges that there may not be a separate sixth stage.

ASK YOURSELF...

- Do you always/necessarily act in accordance with your moral principles/beliefs?
- If not, can you account for the inconsistency?

CRITICAL DISCUSSION 35.2 How are moral reasoning and moral behaviour related?

- Moral reasoning and moral behaviour aren't necessarily correlated (Gibbs & Schnell, 1985). While moral reasoning may determine moral talk, 'talk is cheap' (Blasi, 1980), and what we say and what we do when faced with a moral dilemma often differ, particularly under strong social pressure. Moral development research should really look at what people *do*, rather than what they *say they'd do* (Mischel & Mischel, 1976).
- People may give one moral justification but act on another (Carlsmith *et al.*, 2002). For example, when people are asked to justify punishment by society (as in the criminal justice system), they often cite *utilitarian* motives (such as *deterrence*) that aim to prevent further harm-doing. But, in practice, people make choices that reflect *revenge* and *retribution* (criminals should 'get what's coming to them'). According to Fiske (2004):

  ... Their decisions about penalties do not reflect their high-minded ideals about the operations of society, but rather punishment in proportion to harm, or ... the criminal's apparent 'internal wickedness'.

Again:

People's lack of moral self-insight suggests that moral reasoning may be a post-hoc rationale, rather than a true underlying motive ...

In other words, moral judgements may be a way of trying to defend or justify our moral actions *after the event*, and there's growing evidence suggesting that moral responses are relatively automatic, and much more emotional and intuitive than rational and abstract (Fiske, 2004).

- The relationship between moral judgement and action is extremely complex and poorly understood. Although those who reason at a higher stage are more likely to act prosocially than those at lower stages, the relationship is weak. This is hardly surprising, however, given that behaviour is *multiply determined* (influenced by both psychological and external factors) (Hart *et al.*, 2003). No single factor, such as moral stage, can be expected to direct behaviour. As Blasi (1980) says, moral stages represent ways of thinking about moral issues, *not* specific behavioural tendencies. Two people at the *same* stage may reach *different* judgements; conversely, two people at *different* stages can choose the *same* course of action – but for *different reasons*.



Angry crowd jeering at a criminal en route to his trial

Eisenberg's theory of prosocial moral reasoning

Kohlberg's concept of moral reasoning is *prohibition-oriented*. In the case of Heinz, for example, one prohibition (stealing) is pitted against another (allowing his wife to die). But not all 'moral conflicts' are like this. Eisenberg (1982, 1986; Eisenberg *et al.*, 1991) argues that if we want to understand developmental changes in helping or altruism (see Chapter 30), we need to examine children's reasoning when faced with a conflict between their own needs and those of others, in a context where the role of laws, rules, and the dictates of authority are minimal. This describes *prosocial moral reasoning*.

In a series of studies during the 1980s, Eisenberg presented children of different ages (sometimes followed up into early adulthood) with illustrated hypothetical stories, in which the character can help another person, but at a personal cost.

Box 35.6 A hypothetical story used by Eisenberg to assess prosocial reasoning

A girl named Mary is going to a friend's birthday party. On her way, she sees a girl who has fallen down and hurt her leg. The girl asks Mary to go to her home and get her parents so the parents can take her to the doctor. But if Mary does run and get the child's parents, she will be late for the birthday party and miss the ice cream, cake and all the games.

What should Mary do? Why?

Based on children's responses to this and other similar dilemmas, Eisenberg identified six stages of prosocial moral reasoning.

Table 35.3 Stages of prosocial moral reasoning (based on Eisenberg, 1982, 1986)

Level 1 (hedonistic, self-focused orientation): The individual is concerned with selfish, pragmatic consequences, rather than moral considerations. For example, 'She shouldn't help, because she might miss the party'. What's 'right' is whatever is instrumental in achieving the actor's own ends/desires. Reasons for helping/not helping include direct gain for the self, expectations of future reciprocity, and concern for others whom the individual needs and/or likes.

[This is the predominant mode for preschoolers and younger primary-schoolers.]

Level 2 (needs of others orientation): The individual expresses concern for the physical, material and psychological needs of others, even though these conflict with his/her own needs. For example, 'She should help, because the girl's leg is bleeding and she needs to go to the doctor'. This concern is expressed in the simplest terms, without clear evidence of self-reflective role-taking, verbal expressions of sympathy, or reference to internalised affect, such as guilt.

[This is the predominant mode for many preschoolers and primary-schoolers.]

Level 3 (approval and interpersonal orientation and/or stereotyped orientation): Stereotyped images of good and bad persons and behaviours and/or considerations of others' approval/acceptance are used in justifying prosocial or non-helping behaviours. For example, 'It's nice to help' or 'Her family would think she did the right thing'.

[This is the predominant mode for some primary-schoolers and secondary-school students.]

Level 4a (self-reflective empathic orientation): The individual's judgements include evidence of self-reflective sympathetic responding, role-taking, concern with others' humanness, and/or guilt or positive affect related to the consequences of one's actions. For example, 'She cares about people', and 'She'd feel bad if she didn't help because she'd be in pain'.

[This is the predominant mode for a few older primary-schoolers and many secondary-school students].

Level 4b (transitional level): The individual's justifications for helping/not helping involve internalised values, norms, duties or responsibilities, or refer to the need to protect the rights and dignity of others. But these aren't clearly or strongly stated. For example, 'It's just something she's learnt and feels'.

[This is the predominant mode for a minority of people of secondary-school age and older.]

Level 5 (strongly internalised stage): As for 4b, but internalised values, norms etc are much more strongly stated. Additional justifications for helping include the desire to honour individual and societal contractual obligations, improve the conditions of society, and belief in the dignity, rights and equality of all human beings. It's also characterised by the wish to maintain self-respect for living up to one's own values and accepted norms. For example, 'She'd feel bad if she didn't help because she'd know she didn't live up to her values'.

[This is the predominant mode for a very small minority of secondary-school students and no primary-schoolers.]

An evaluation of Eisenberg's theory

- In a review of her research, Eisenberg (1996) points out that, as predicted, children almost never said they'd help in order to avoid punishment or because of blind obedience to authority, such as adults. This would be expected, given that children are seldom punished for not acting in a prosocial way (but *are* often punished for wrongdoing). This differs greatly from what's been found for prohibition-oriented moral reasoning.
- For Kohlberg, other-oriented reasoning emerges relatively late, but Eisenberg expected to find it by the pre-school years. Even four- to five-year-olds often appeared to orient to others' needs, showing what seemed to be primitive empathy. Also, references to empathy-related processes (such as taking the other's perspective and sympathising) are particularly common in prosocial moral reasoning.
- Contrary to Kohlberg's claims, even individuals who typically used higher-level reasoning occasionally reverted to lower-level reasoning (such as egotistic, hedonistic reasoning). This was especially likely when they chose not to help, suggesting the influence of *situational variables.* These are also implicated by some cross-cultural studies. For example, children raised on Israeli kibbutzim are especially likely to emphasise reciprocity between people, whereas city children (Israeli and from the USA) are more likely to be concerned with personal costs for helping others. If individuals' moral reasoning can vary across situations, then there's likely to be only a modest relationship between their typical level of moral reasoning and their actual prosocial behaviour. This is supported by Eisenberg's research (see Critical Discussion 35.2).
- One additional factor that's been implicated is emotion, in particular, *empathy.* Whether or not children help others depends on the *type* of emotional response that others' distress induces in them (rather than *whether or not* they respond emotionally). People who respond *sympathetically/empathically* (associated with, for instance, lowered heart rate) are more likely to help than those who experience *personal distress* (associated with accelerated heart rate).

ASK YOURSELF...

- How are these findings related to the *empathy–altruism hypothesis* and *universal egoism* discussed in Chapter 30?

- A fundamental assumption of the *arousal: cost reward* (ACR) *model* of helping behaviour is that people are emotionally responsive to others' distress. Both adults and children not only report feeling empathy, they also become physiologically aroused by others' distress. Preschoolers also spontaneously show signs of facial concern and physiological arousal (Fabes *et al.*, 1993), and even one- to two-*day*-olds cry in response to another baby's distress (Sagi & Hoffman, 1976).
- There's a clear relationship between emotional regulation in parents and in their children, with sympathetic parents having sympathetic children (Eisenberg *et al.*, 1991). Democratic, warm and reasoning parenting is associated with an increased capacity for children's prosocial behaviour. Not surprisingly, autocratic, cold, harsh and inconsistent parenting predicts children's antisocial tendencies (Coie & Dodge, 1998).
- According to Eckensberger (1999), emotions (especially positive emotions) are increasingly being seen as the basis for moral development. This represents a move away from Kohlberg's theory and a return to Piaget's, in which feelings of mutual respect and empathy were seen as central.

SOCIAL LEARNING THEORY

Social learning theories (SLTs), such as those of Bandura (1977a) and Mischel (1973), originated in the USA in the 1940s and 1950s. They were an attempt to reinterpret certain aspects of Freud's psychoanalytic theory in terms of *learning theory* (classical and operant conditioning: see Chapter 11). In the 1960s and 1970s, Bandura and his colleagues tried to make Freud's concept of identification more objective by studying it experimentally in the form of *imitation.*

More specifically, many of these experiments were concerned with aggression (see Key Study 35.2). SLT has also been applied to many aspects of development, such as gender (see Chapter 36) and morality. This focus on *human social behaviour* is one feature that sets SLT apart from conditioning (or orthodox learning) theory.

Some important similarities and differences between SLT and orthodox learning theory

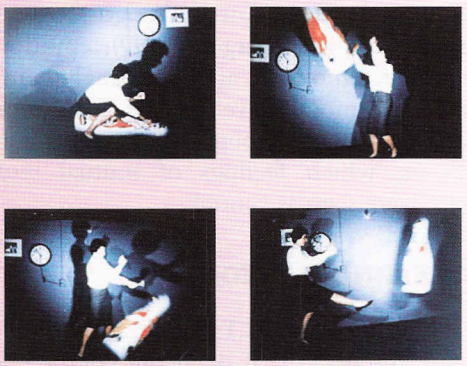
- While SL theorists agree that all behaviour is learned according to the same learning principles, they're interested specifically in *human learning.*
- Although SL theorists agree that we should observe what's observable, they also believe that there are important *cognitive mediating variables* which intervene between stimulus and response, without which we cannot adequately explain human behaviour (see Box 35.7, page 617).
- SL theorists emphasise *observational learning* or *modelling* (learning through watching the behaviour of others, called *models*). This occurs spontaneously, with no deliberate effort by the learner, or any intention by the model to teach anything.

Observational learning takes place without any reinforcement – mere exposure to the model is sufficient for learning to occur (Bandura, 1965). However, whether the model's behaviour is imitated depends partly on the

consequences of the behaviour, for both the model and the learner. Reinforcement is important only in so far as it affects *performance* (not the learning itself).

KEY STUDY 35.3 Learning versus performance (Bandura, 1965)

- Bandura (1965) showed three groups of children a film of an adult behaving aggressively towards a *Bobo doll*.



Group A (control) saw the adult kicking, pummelling and punching the Bobo doll.

Group B (model-rewarded) saw what group A saw, but a second adult appeared towards the end of the film and commended the model's aggressive behaviour. Sweets and lemonade were offered to the model.

Group C (model-punished) also saw the same filmed aggression, but this time a second adult scolded the model and warned against further aggression.

- So, the only difference between the three groups was the *consequences for the model* of his/her aggression.
- After the film, all the children (individually) went into a playroom, which contained a large number of toys, including a Bobo doll and a mallet. They were observed for 10 minutes, and the number of acts of *imitative aggression* was recorded for each child.
- While group C children showed *significantly fewer* aggressive acts than groups A and B, there was no difference between these two groups. This suggests that *vicarious punishment* is more powerful than *vicarious reinforcement*.
- More importantly, all the children were later asked to reproduce as much of the model's behaviour as they could, and were directly rewarded for each act of imitative aggression. Under these conditions, all three groups showed the *same* high levels of imitative aggression.

ASK YOURSELF...

- What do these findings tell us about what children in the different groups learned when originally observing the model?

- This shows that group C children must have attended to and remembered the model's behaviour (*learned* from the model) to the same extent as those in groups A and B. But this learning hadn't been apparent in their *performance* when they were first observed, but only after receiving direct reinforcement. Hence, reinforcement (either vicarious or direct) wasn't needed for learning (acquisition), but it was for imitation (performance).



After watching a film of an aggressive model who punched, kicked and hurled a Bobo doll, these children spontaneously imitated the model's aggression

Reinforcement as information about the future

Bandura (1977a) challenged Skinner's claim that reinforcements and punishments automatically strengthen and weaken behaviour (see Chapter 11). For Bandura:

> Reinforcement serves principally as an informative and motivational operation rather than as a mechanical response strengthener.

Reinforcement provides the learner with *information* about the likely consequences of certain behaviour under certain conditions: it improves our prediction of whether a given action will lead to pleasant (reinforcement) or unpleasant (punishment) outcomes in the *future*. It also *motivates* us by causing us to anticipate future outcomes. Our present behaviours are largely governed by the outcomes we expect them to have, and we're more likely to try to learn the modelled behaviour if we value its consequences.

The role of cognitive factors in observational learning

The learning process is much more complex for Bandura than it is for Skinner, for whom 'the mind' had no part to play in a scientific psychology (see Chapter 2). In Bandura's (1974) view:

> Contrary to mechanistic metaphors, outcomes change behaviour in humans through the intervening influence of thought.

Box 35.7 Five cognitive mediating variables influencing the likelihood of learning and/or performance

- The learner must *pay attention to* the relevant clues and ignore those aspects of the model and the environment that are incidental and irrelevant. Attention can be influenced by the model's distinctiveness, attractiveness, or power (whether or not the model's behaviour has functional value for the learner), the learner's level of arousal, and expectations about the model.
- A *visual image* or *semantic code* for the modelled behaviour is recorded in memory. Without an adequate coding system, the learner will fail to store what's been seen or heard (see Chapter 17). While infants are largely confined to immediate imitation, older children can defer imitation because of their superior use of symbols (see Chapter 34).
- *Memory permanence* derives from the use of devices such as rehearsal and organisation, and employing multiple codes to help retain the stored information over long periods.
- *Reproducing the observed motor activities* accurately usually requires several trials to get the muscular 'feel' of the behaviour. Older children enjoy greater muscular strength and control.
- *Motivation* refers to the role of reinforcement, which can be direct (as when the child is praised by an adult), or vicarious (as when a child sees another child being praised: see Key Study 35.3) *Self-reinforcement* is also possible (as when the child praises itself/feels pleased with itself).

An evaluation of Bandura's SLT

Is SLT a developmental theory?

- As noted in Box 35.7, changes take place in cognitive or mediating processes as children get older. However, these processes essentially apply at any age, which means that the theory isn't a true theory of development (Durkin, 1995).
- Bandura resists the notion of a general structural reorganisation of the kind proposed by Piaget (see Chapter 34), and so he fails to take account of cognitive *development* (Grusec, 1992). As Bee (2000) points out, SLT can say how a child might acquire a particular behaviour pattern, but it doesn't take into account the underlying developmental changes that are occurring. For example, do three-year-olds and ten-year-olds typically learn the same amount or in the same way from modelling? As Bee (2000) notes:

> Given Bandura's emphasis on cognitive aspects of the modelling process, a genuinely developmental social learning theory could be proposed, although no such theory now exists.

Indeed, the importance of cognitive factors is reflected in Bandura's (1986, 1989) renaming of SLT as *social cognitive theory* (SCT). Other important cognitive processes are those relating to the self.

Box 35.8 Self-concept, self-monitoring, and self-efficacy

- According to Bandura, children learn both overt behaviour/concrete skills and information, and also abstract skills and information through modelling. Indeed, *abstract modelling* is part of his SCT (1986, 1989). For example, the 'rule' underlying a model's behaviour can be extracted from observing the behaviour, without the rule being made explicit or articulated. In this way, the child can acquire attitudes, values, expectancies, ways of solving problems, and standards of self-evaluation.
- By incorporating (or internalising) societal standards into its self, the child can monitor its own behaviours in terms of these standards. This *self-monitoring* ensures that behaviour is regulated even in the absence of reinforcement. Indeed, according to Bandura (1971), 'There is no more devastating punishment than self-contempt'; that is, we are our own harshest critics. This mirrors Freud's view of the young child's superego, which is often more punitive than the parents it has replaced (see page 603).
- Another internalised standard or expectancy is *self-efficacy*. This refers to our belief that we can act effectively and exercise some control over events that influence our lives (Bandura, 1977a, 1986). This is crucially important for motivation, since how we judge our own capabilities is likely to affect our expectations about future behaviour. For example, if we feel that a model's actions are within our capabilities, then we may attempt to imitate them, but a low sense of self-efficacy regarding the modelled skill is likely to inhibit us (Durkin, 1995).

- One of the strengths of Bandura's SLT (and other versions, such as that of Mischel, 1973) is the claim that behaviour can be understood only by taking the actor's self-concept, self-monitoring, self-efficacy, and other mediating variables into account. However, these internal processes don't constitute 'personality', a concept which most SL theorists tend to dismiss (Durkin, 1995: see Chapter 42). Nevertheless, they make the theory far less mechanistic than Skinner's, for example, which focuses entirely on external events. For Bandura (1973):

The environment is only a potentiality, not a fixed property that inevitably impinges upon individuals and to which their behaviour eventually adapts. Behaviour partly creates the environment and the resultant environment, in turn, influences the behaviour.

This view is called *reciprocal determinism* (Bandura, 1977a, 1986). People are both products and producers of their environments.

CONCLUSIONS

As we noted in the *Introduction and overview,* different psychological theories attempt to answer quite different questions about moral development. To the extent that all these questions are relevant to understanding the full complexity of moral development, psychoanalytic theory, cognitive developmental theories, and SLT all make significant contribution to our understanding of this critically important aspect of socialisation.

CHAPTER SUMMARY

- According to Freud, the **psychic apparatus** consists of the **id**, **ego** and **superego**. The id and the ego are governed by the **pleasure principle** and **reality principle** respectively. The superego comprises the **conscience** and **ego-ideal**, representing the **punishing** and **rewarding** parent respectively.
- A boy's **Oedipus complex** ends when he identifies with his father (**identification with the aggressor**), motivated by his **fear of castration/castration anxiety**. Since a girl's Oedipus complex begins with her belief that she's already been castrated, Freud found it difficult to explain her identification with her mother. One suggestion was **anaclitic identification**.
- There's no evidence to support Freud's claim that females have weaker superegos than males, and **penis envy** has been reinterpreted as envy of men's superior social status.
- **Cognitive–developmental theories** are concerned with the **reasons** underlying moral judgements, rather than the judgements themselves.
- According to Piaget, the change from **heteronomous** to **autonomous** morality occurs due to the shifts from egocentric to operational thought, and from **unilateral respect** and adult constraint to **mutual respect** within the peer group.
- Although children's understanding of **intention** is much more complex than Piaget believed, many of the age trends he described have been supported by cross-cultural studies, mainly from Africa.
- Kohlberg identified six qualitatively different **stages** in moral development, spanning three basic levels of moral reasoning: **preconventional**, **conventional** and **postconventional morality**.
- Despite extensive empirical support for the sequence and universality of the (first four) stages, the **sociocultural approach** maintains that cultural factors play a significant part in moral reasoning. For Kohlberg, the focus is on what takes place within the individual's head.
- Kohlberg's theory has been criticised for its bias towards **western** cultures, and for being based on a **male** definition of morality. However, several studies show that gender differences in morality are less important than the **kind of dilemmas** being considered.
- Kohlberg has also been criticised for overemphasising moral **thinking** (rather than behaviour), and those who attain the highest stages may simply be more sophisticated verbally. A separate stage 6 may not even exist.
- While Kohlberg's theory is **prohibition-oriented**, Eisenberg concentrates on the development of **prosocial moral reasoning**. Many of the predictions derived from her theory have been supported, and her research has also indicated that **situational variables** influence moral reasoning.
- **Empathy**, and other positive emotions, are becoming increasingly important in explanations of moral development.
- Bandura's **social learning theory** (SLT) investigated Freud's concept of identification, largely through laboratory experiments of **imitative aggression**.
- Bandura emphasised **observational learning/modelling**, distinguished between **learning** and **performance**, and identified several **cognitive variables** that **mediate** between observation of a model's behaviour and its imitation.
- **Reinforcement** is a source of both **information** and **motivation**. While not necessary for learning, reinforcement (direct, vicarious or self-administered) may be needed for **performance**.
- **Self-reinforcement** is related to **self-monitoring**, the SLT equivalent of Freud's superego. This represents an internalised societal standard or expectancy, another example being **self-efficacy**.

Links with other topics/chapters

- Through the concept of fixation, Freud was able to explain how *individual differences in personality* arise from common developmental patterns (Chapter 42).
- The concept of maturation relates to the *nativist* explanation of behaviour. Like Piaget (Chapter 34), Freud saw both biological and *experiential* factors contributing to personality development, especially individual differences (Chapter 50).
- *Feminist psychologists* have criticised the *androcentric* (male-centred) *nature* of Freud's and Kohleberg's theories (Chapter 47).
- Taking credit for good deeds (part of the *self-serving bias:* Chapter 23) is an accepted part of self-promotion (trying to create a favourable impression in others –

impression management: Chapter 22) in western *individualist* cultures, while in China (and other *collectivist* cultures) it's seen as a character flaw (Chapter 47).

- *Cross-cultural* studies of, say, Kohlberg's theory, are more likely to look for the *universal* nature of the stages, while *cultural psychologists* are interested in *cultural diversity* (Chapter 47).
- Gilligan's distinction between male and female moralities could be seen as the gender equivalent of the distinction between *individualist* and *collectivist cultures* (Chapter 47).
- The inconsistency between what people say and what they believe is demonstrated in Asch's *conformity experiments* (Chapter 26). The inconsistency between what people say they'd do and what they'd probably do under particular conditions is demonstrated in studies of *obedience* (Chapter 27).
- An inability to feel empathy for others may help explain (some cases of) *criminal behaviour* (Chapter 46), as can the lack of guilt associated with *affectionless psychopathy* (Chapter 32).
- Bandura's study of observational learning in relation to *imitation of aggression* represented the first wave of research into the effects of *media violence* (Chapter 29).
- Bandura's concept of self-efficacy is important for understanding and evaluating the effects of all forms of *psychotherapy* (Chapter 45).
- Reciprocal determinism is relevant to the debates concerning *free will and determinism* (Chapter 49) and *nature–nurture* (Chapter 50).

The 'vocabulary' of sex and gender
Biology and sexual identity
Hermaphroditism
Gender stereotypes and gender differences
The meaning of sex differences
Theories of gender development
Biosocial theory
Evaluation of biosocial theory
Sociobiological theory
Evaluation of the sociobiological approach
Freud's psychoanalytic theory
Evaluation of the psychoanalytic approach
Social learning theory (SLT)
Evaluation of SLT
Cognitive–developmental theory (CDT)
Evaluation of CDT
Gender-schematic processing theory (GSPT)
Cultural relativism
Are there cultural universals?
Conclusions
Chapter summary
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36

GENDER DEVELOPMENT



INTRODUCTION AND OVERVIEW

Often the first thing we notice about other people is whether they're male or female. The importance of *sexual identity* to our self-concept and our interactions with others is a reflection of the fact that every known culture distinguishes between male and female (see Chapter 33). In turn, this distinction is accompanied by widely and deeply held beliefs (*stereotypes*) about the psychological make-up and behaviours belonging to each sex (see Chapter 22). The study of *psychological sex differences* is really an attempt to see how accurate these stereotypes are.

At the beginning of the twentieth century (especially in the USA), many of the first generation of scientifically trained women psychologists channelled their research efforts into the extent and nature of sex differences. But psychology's interest in this research area waned with the rise of behaviourism (Crawford & Unger, 1995). Interest was revived in the 1970s, driven largely by *feminist psychologists*. According to feminist interpretations of sex differences, social, political, economic, and cultural factors determine *gender*, our awareness and understanding of the differences that distinguish males from females. This view is directly opposed to those of *sociobiologists* and *evolutionary psychologists*, who argue that sex differences are 'natural', having evolved as a part of the more general adaptation of the human species to its environment (see Chapter 2 and Clamp, 2001).

Other theoretical accounts of gender and gender differences include *biological approaches, biosocial theory, psychoanalytic theory, social learning theory, cognitive–developmental theory,* and *gender schema theory.* All of these, with the exception of biological approaches, stress the *interaction* between biological and environmental influences, albeit in quite different ways.

THE 'VOCABULARY' OF SEX AND GENDER

ASK YOURSELF...
- Excluding the act of sex (or sexual behaviour), can 'sex' mean different things?
- What's the difference between 'sex' and 'gender'?

Feminist psychologists (e.g. Unger, 1979) distinguish between sex and gender. Sex refers to the biological facts about us, such as genetic make-up, reproductive anatomy and functioning, and is usually referred to by the terms 'male' and 'female'. Gender, by contrast, is what culture makes out of the 'raw material' of biological sex. It's the *social equivalent* or *social interpretation* of sex.

Sexual identity is an alternative way of referring to our biological status as male or female. Corresponding to gender is *gender identity,* our classification of ourselves (and others) as male or female, boy or girl, and so on. Sexual and gender identities correspond for most people, but not in *transsexualism*. While being anatomically male or female, transsexuals firmly believe that they belong to the opposite sex. As a result, their biological sexual identity is fundamentally inconsistent with their gender identity.

Gender role (or *sex role*) refers to the behaviours, attitudes, values, beliefs and so on which a particular society either expects from, or considers appropriate to, males and females on the basis of their biological sex. To be *masculine* or *feminine,* then, requires males or females to conform to their respective gender roles.



Nadia Almada, the Portuguese transsexual winner of *Big Brother* 2004

All societies have carefully defined gender roles, although their precise details differ between societies. *Gender* (or sex) *stereotypes* are widely held beliefs about psychological differences between males and females which often reflect gender roles (see pages 624-625).

Sex typing is the process by which children acquire a sex or gender identity and learn gender-appropriate behaviours (adopt an appropriate sex role). Sex typing begins early in western culture, with parents often dressing their new-born baby boy or girl in blue or pink. Even in the earliest days of infancy, our gender influences how people react to us (Condry & Ross, 1985). Indeed, usually the first question asked by friends and relatives of parents with a new-born baby is 'Boy or girl?'. By age three or four, most children have some knowledge about their own genders. They know, for example, that boys become men and girls become women, and that some games are played by boys and others by girls. A permanent gender identity is usually acquired by age five (see Box 36.4, page 630).

BIOLOGY AND SEXUAL IDENTITY

Biologically, sex is a *multidimensional* variable, and there are at least five categories of biological factors that influence gender identity.

Box 36.1 Five categories of biological sex

Chromosomal sex: Normal females inherit two X chromosomes, one from each parent (XX). Normal males inherit one X chromosome from the mother and one Y chromosome from the father (XY). Two chromosomes are needed for the complete development of both internal and external female structures, and the Y chromosome must be present

for the complete development of male internal and external structures (Page *et al.*, 1987). For many years it was believed that if the Y chromosome were absent, female external genitals would develop. However, a *female-determining gene* has been located on the X chromosome (Unger & Crawford, 1996). Female embryos begin synthesising large quantities of oestrogen, which is thought to play a key role in the development of the female reproductive system. A gene on the Y chromosome called TDF (*testis-determining factor*) appears to be responsible for testis formation and male development (Hodgkin, 1988).

Gonadal sex: This refers to the sexual or reproductive organs (ovaries in females and testes in males). *H-Y antigen,* controlled by genes on the Y chromosome, causes embryonic gonads to be transformed into testes. If H-Y antigen isn't present, gonadal tissue develops into ovaries (Amice *et al.*, 1989).

Hormonal sex: When the gonads are transformed into testes or ovaries, genetic influences cease and sex *hormones* take over biological sex determination. The male sex hormones are called *androgens,* the most important being *testosterone* (secreted by the testes). The ovaries secrete two distinct types of female hormone, *oestrogen* and *progesterone.* Although males usually produce more androgens, and females more oestrogens, both males and females produce androgens and oestrogens. So, strictly, there are no exclusively 'male' or 'female' hormones (Muldoon & Reilly, 1998).

Sex of the internal reproductive structures: The Wolffian ducts in males and the Müllerian ducts in females are the embryonic forerunners of the internal reproductive structures. In males, these are the prostate gland, sperm ducts, seminal vesicles, and testes. In females, they are the Fallopian tubes, womb, and ovaries.

Sex of the external genitals: In males, the external genitalia are the penis and scrotum. In females, they are the outer lips of the vagina (*labia majora*). In the absence of testosterone (which influences both the internal and external structures of chromosomal males), female structures develop (see text and Figure 36.1).

Hermaphroditism

The categories identified in Box 36.1 are usually highly correlated, so a person tends to be male (or female) in all respects. The categories also tend to be correlated with non-biological aspects of sex, including the sex the baby is assigned to at birth, how it's brought up, gender identity, gender-role identity, and so on. Either pre- or postnatally, however, disorders can occur leading to an inconsistency or low correlation between the categories. These disorders can tell us a great deal about the development of gender identity, gender role, and gender-role identity.

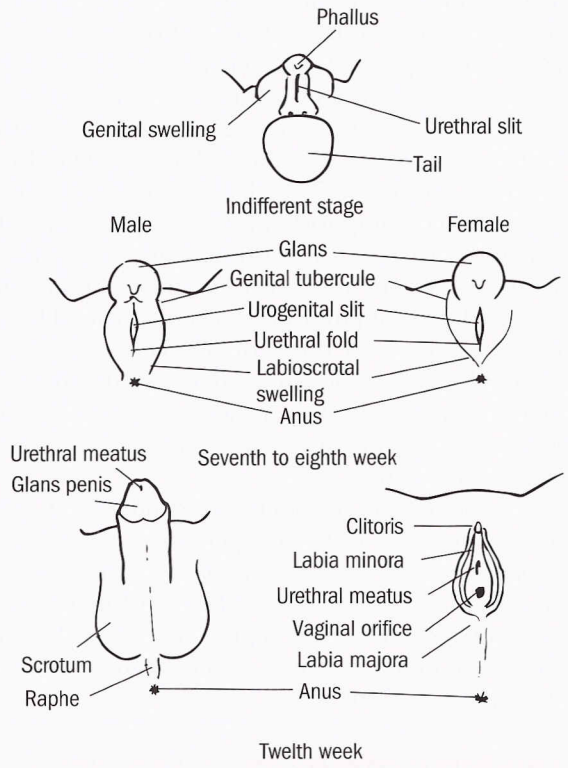


Figure 36.1 Prenatal differentiation of male and female genitalia. From a relatively undifferentiated state, development proceeds by means of the relative enlargement of structures that have analogues in members of the other sex (from Unger, R.K. (1979) *Female and Male,* New York: Harper & Row)

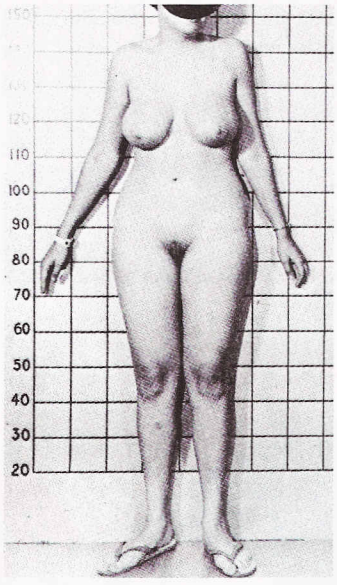
People with such disorders are called hermaphrodites. *True hermaphrodites* (from the mythical Greek god/goddess Hermaphrodite, who had attributes of both sexes) have either simultaneously or sequentially functioning organs of both sexes. They are very rare, and their external organs are often a mixture of male and female structures.

CASE STUDY 36.1 Mr Blackwell: hermaphrodite (Goldwyn, 1979)

- In an article called 'The fight to be male', Goldwyn cites the case of Mr Blackwell, only the 303rd true hermaphrodite in medical history.
- He's described as a handsome and rather shy 18-year-old Bantu. Although he had a small vaginal opening as well as a penis, he was taken to be a boy and brought up as such. But when he was 14 he developed breasts and was sent to hospital to discover why this had happened. It was found that he had an active ovary on one side of his body and an active testicle on the other. He expressed the wish to remain male, and so his female parts were removed.
- Goldwyn points out that if his internal ducts had been differently connected, Mr Blackwell could have actually fertilised himself without being able to control it.

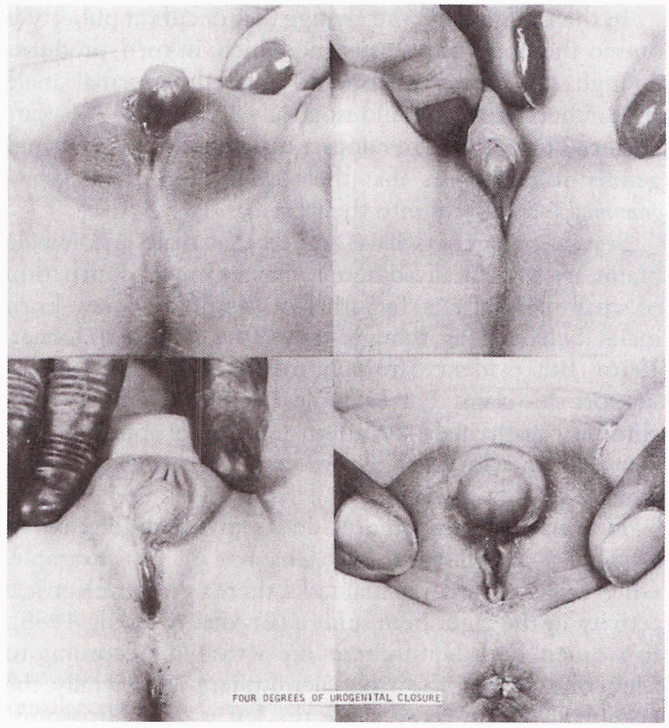
Pseudohermaphrodites are more common. Although they too possess ambiguous internal and external reproductive structures, they're born with gonads that match their chromosomal sex (unlike true hermaphrodites).

- In *androgen insensitivity syndrome* (AIS) (or *testicular feminising syndrome*), pre-natal development in a chromosomally normal (XY) male is feminised. The internal reproductive structures of either sex fail to develop, and the external genitals fail to differentiate into a penis and scrotum. Normal-looking female external genitals and a shallow vagina are present at birth. At puberty, breast development occurs, but the individual fails to menstruate. Because of the presence of a very shallow (or 'blind') vagina, little or no surgery is needed for the adoption of a female appearance.



Adult with testicular feminisation (XY but with an insensitivity to androgen). These individuals are usually taller than the average female and tend to have an attractive 'female' physique (from Money & Ehrhardt, 1972, reprinted with permission)

- In *adrenogenital syndrome* (AGS), a chromosomally normal (XX) female is exposed to an excessive level of androgens during the critical period of prenatal sexual differentiation. While the internal reproductive structures are unaffected, the external structures resemble those of a male infant. For example, an enlarged clitoris appears to be a penis. These individuals are usually raised as females (see photographs opposite).
- In *DHT-deficient males* (or *5-alpha-reductase deficiency*), a genetic disorder prevents the normal prenatal conversion of testosterone into dihydrotestosterone (DHT). This hormone is necessary for the normal development of male external genitals. These males are usually incorrectly identified as females and raised as girls (but see Case Study 36.2).



Ambiguous appearance at birth of the genitalia of individuals with the adrenogenital syndrome (XX, but with excessive androgen during pre-natal differentiation) (from Money & Ehrhardt, 1972)

- In *chromosome abnormalities,* there's a discrepancy between chromosomal sex and external appearance, including the genitalia. The most common examples are Turner's syndrome (where a female individual has a single sex chromosome: XO) and Klinefelter's syndrome (where a male individual has an extra X chromosome: XXY).

Supporters of a biological approach argue that males and females are biologically programmed for certain kinds of activities compatible with male and female roles.

CASE STUDY 36.2 The Batista family: an overnight sex change? (Imperato-McGinley *et al.*, 1974)

- Imperato-McGinley *et al.* studied a remarkable family who live in Santo Domingo in the Dominican Republic (in the Caribbean). Of the ten children in the Batista family, four of the sons have changed from being born and growing up as girls into muscular men: they were born with normal female genitalia and body shape, but when they were 12, their vaginas healed over, two testicles descended, and they grew full-size penises.
- The Batistas are just one of 23 affected families in their village in which 37 children have undergone this change. All these families had a common ancestor, Attagracia Carrasco, who lived in the mid-eighteenth century. She passed on a mutant gene that shows only when carried by both parents.

In the Batista boys, the change that occurs at puberty is due to the flood of testosterone which, in turn, produces enough dihydrotestosterone to give the normal male appearance (which would normally happen 10–12 years earlier). Their ability to adopt a male gender identity and gender role suggests that their testosterone had *preprogrammed* masculinity into their brains.

Several researchers have argued that male and female brains are structurally different. For example, destruction of small parts of rats' hypothalami resulted in new-born males behaving as though they were female (Dorner, 1976). But evidence from human studies tends not to support this claim. For example, Daphne Went, although chromosomally male, has a female external appearance, is married, and leads an active and successful life as a woman (Goldwyn, 1979).

However, there's some evidence of sex differences in *hemispheric specialisation* (see Chapter 4). For example, when males perform spatial tasks, there's greater electrical activity in the right hemisphere (Bryden & Saxby, 1985). In women, both hemispheres are activated. According to McGlone (1980), the right hemisphere is generally the dominant one in men, while the left is generally dominant in women (see Boxes 36.1 and 36.2).

Despite evidence that the corpus callosum is larger overall in women and longer towards the back of the brain (an example of a *dimorphic* characteristic), Kimura (1993) has warned against accepting this evidence uncritically.

Box 36.2 The empathising-systemising (E-S) theory of female and male brains (Baron-Cohen, 2003a, 2003b)

- According to Baron-Cohen, the *female* brain is predominantly hardwired for *empathy*, while the *male* brain is predominantly hardwired for *understanding and building systems*. He calls this the *empathising-systemising* (E-S) *theory*.
- According to the theory, a person (whether male or female) has a particular 'brain type' There are three common brain types:
  - (i) for some individuals, empathising is stronger than systemising (the female brain/a brain of type E)
  - (ii) for others, systemising is stronger than empathising (the male brain/a brain of type S)
  - (iii) yet others are equally strong in their empathising and systemising ('balanced brain'/a brain of type B).
- Anecdotal evidence for the theory comes in the form of typical male and female choices of reading material (magazines) and hobbies.
- Scientific evidence shows that girls display more empathy and sensitivity towards others. For example, baby girls, as young as 12 months old, respond more empathically to others' distress, showing greater concern through more sad looks, sympathetic vocalisations and comforting. This echoes what's found in adulthood: more women report sharing their friends' emotional distress, and they also spend more time comforting people. Women are also more sensitive to facial expressions, better at decoding non-verbal communication, picking up subtle nuances from tone of voice or facial expression, or judging a person's character.
- Boys, from toddlerhood onwards, are more interested in cars, trucks, planes, guns and swords, building blocks, constructional toys and mechanical toys (i.e. *systems*). They seem to love putting things together, and 'building' things. Boys also enjoy playing with toys that have clear functions, buttons to press, things that will light up, or devices that will cause another object to move. Girls prefer dolls, soft toys and domestic articles (Golombok & Fivush, 1994).
- Males are also generally better at map-reading and mental rotation (both tests of systemising), and all these differences are reflected in 'typical' male and female *occupations*.
- Baron-Cohen believes that *hormonal factors* are the most likely cause of this difference between male and female brains.

(Based on Baron-Cohen, 2003a)



Boys 'systemising'

GENDER STEREOTYPES AND GENDER DIFFERENCES

ASK YOURSELF...

- What do you consider to be 'typical' feminine and masculine characteristics?
- Are these *merely* stereotypes, or do you think there are real, actual differences between males and females?
- If there are real differences, how do they arise?

There appears to be a high degree of agreement across 30 countries regarding the characteristics associated with each gender group (Williams & Best, 1994). For example, male-associated terms included 'aggressive', 'determined' and 'sharp-witted', while female-associated terms included 'cautious', 'emotional' and 'warm'. However, as far as actual differences are concerned, many stereotypes about males and females have little empirical support.

Box 36.3 Some findings relating to gender differences

Aggression: According to Maccoby & Jacklin (1974) and Weisfeld (1994), boys are more aggressive verbally and physically than girls, a difference which appears as soon as social play begins (around two-and-a-half years). While both sexes become less aggressive with age, boys and men remain more aggressive throughout development (see Chapter 29). However, some studies have shown that women score higher for certain kinds of indirect non-physical aggression (Durkin, 1995), while others have found no sex differences at all (e.g. Campbell & Muncer, 1994). According to Schaffer (2004), when both physical and non-physical aggression are taken into account, the gender difference almost disappears.

Verbal ability: From preschool to adolescence, the sexes are very similar with respect to verbal ability. But at age 11 females become superior, and this increases during adolescence and possibly beyond (Maccoby & Jacklin, 1974). But again, evidence suggests that any such differences are so small as to be negligible (Hyde & Linn, 1988).

Spatial ability: Males' ability to perceive figures or objects in space and their relationship to each other is consistently better than females' in adolescence and adulthood (Maccoby & Jacklin, 1974). But while there's male superiority on some spatial tasks, *within*-sex variability is large. Moreover, when between-sex differences are found, they're usually small (Durkin, 1995).

Mathematical ability: Mathematical skills increase faster in boys, beginning around age 12–13 (Maccoby & Jacklin, 1974). But while there are significant sex differences, these are in the *reverse* direction to the stereotype (Hyde *et al.*, 1990).

Maccoby & Jacklin's (1974) review concluded that hardly any of the many psychological attributes they examined clearly differentiated the sexes. This was subsequently confirmed by Ruble & Martin (1998). According to Schaffer (2004):

> ... personality and cognitive differences are far fewer in number than is commonly believed, and, where they do exist, moderate in extent and are quite probably becoming less evident as society redefines the role of the sexes.

The meaning of sex differences

Durkin (1995) suggests that:

> The overwhelming conclusion to be drawn from the literature on sex differences is that it is highly controversial.

A statistically significant difference *doesn't* imply a large behavioural difference. Rather, what determines a significant result is the *consistency* of the differences between groups. So, for example, if all the girls in a school scored 0.5 per cent higher than all the boys on the same test, a small but highly significant result would be produced (Edley & Wetherell, 1995).

Eagly (1983), however, has argued that in at least some cases a significant difference *does* reflect a substantial sex difference. By combining the results of different but comparable studies (*meta-analysis*), substantial sex differences emerge on some measures. According to Eagly, research has actually tended to conceal rather than reveal sex differences. However, the differences within each gender are at least as great as the differences between them (Maccoby, 1980).

CRITICAL DISCUSSION 36.1 The politics of sex difference research

- According to Edley & Wetherell (1995), debates in the nineteenth century about which sex is more intelligent were clearly more than just academic. Early attempts to prove that men's brains are larger and more powerful were just as much about justifying men's dominant social position as about trying to discover the 'natural' order of things.
- Similarly, the argument over inherent or natural sex differences is often part and parcel of a more general political debate about how society should be organised. For example, the claim that women are naturally more subjective, empathic, and emotional leads very neatly to the decision that they are best suited to child care and other domestic tasks which are devalued by men precisely because they're typically performed by women.
- More specifically, within psychology as a whole, but perhaps in the study of gender in particular, there's a strong bias towards publishing studies that have produced 'positive' results (where statistically significant sex differences have been found). When sex differences *aren't* found, the findings tend to remain unreported: the far more convincing evidence for 'sex similarity', therefore, is ignored, creating the very powerful impression that differences between men and women are real, widespread, and 'the rule'. Indeed, the very term 'sex similarities' sounds very odd (Jackson, 1992; Tavris, 1993; Unger, 1979). (See also Box 36.3.)

THEORIES OF GENDER DEVELOPMENT

Biosocial theory

According to Edley & Wetherell (1995), to ask 'What is the biological basis of masculinity (or femininity)?' is to pose a false question. In their view:

> It requires us to separate what cannot be separated: men [and women] are the product of a complex system of factors and forces which combine in a variety of ways to produce a whole range of different masculinities [and femininities].

Biosocial theory takes social factors into account in relation to biological ones. It sees the *interaction* between biological and social factors as important, rather than biology's direct influence. As far as other people are concerned, the baby's sex is just as important as its temperament. For example, the 'baby X' experiments (Smith & Lloyd, 1978) involved dressing babies in unisex snowsuits and giving them names that were sometimes in line with their true gender, and sometimes not. When adults played with them, they treated the babies according to the gender they *believed* them to be. This indicates that a person's (perceived) biological make-up becomes part of his/her social environment through others' reactions to them.

According to Money & Ehrhardt (1972), 'anatomy is destiny': how an infant is labelled sexually determines how it's raised or socialised. In turn, this determines the child's gender identity, and from this follow its gender role, gender-role identity, and sexual orientation. Psychologically, sexuality is *undifferentiated* at birth: it becomes differentiated as masculine or feminine in the course of the various experiences of growing up.

KEY STUDY 36.1 Pseudohermaphrodites and gender identity (Money & Ehrhardt, 1972)

- Money and Ehrhardt studied girls with AGS (see above, page 623), who were initially raised as boys. When the mistake was discovered, their genitals were surgically corrected, and they were reassigned and raised as girls.
- Money and Ehrhardt claim that it's possible to change the sex of rearing without any undue psychological harm being done, provided this occurs within a 'critical' or 'sensitive period' of about two-and-a-half to three years. But after this, reassignment to the opposite sex can cause extreme psychological disturbance.
- Money and Ehrhardt also studied ten people with testicular feminising syndrome. These people showed a strong preference for the female role, which also supports the view that sex of rearing is more important than biological sex. The case of Daphne Went (see text, above) also tends to support this view.

Evaluation of biosocial theory

◎ Just because some people appear to be flexible in their psychosexual identities doesn't in itself disprove that 'built-in biases' still have to be overcome (Diamond, 1978). Money and Ehrhardt's participants form an *atypical* sample, and there's no evidence that people *in general* are as flexible in their psychosexual orientation and identity.

CASE STUDY 36.3 The case of the penectomised twin (Money & Ehrhardt, 1972)

- As a result of an accident during circumcision, one of a pair of identical twins lost his penis (*penectomised*).
- At 22 months, 'he' was surgically castrated, oestrogen was given, and a vaginal canal constructed. He was subsequently raised as Joan.
- At age 4, Joan preferred dresses to trousers, took pride in her long hair, and was cleaner than her brother, Kevin. At age 9, although Joan had been the dominant twin since birth, she expressed this by being a 'fussy little mother' to Kevin.
- Money took these findings to support the view that gender identity (and gender role) is *learned*.

◎ The reversal of original sexual assignment is possible if it takes place early enough and is consistent in all respects, which includes the external genitalia conforming well enough to the new sex. But castration and the use of oestrogen clearly contributed to the ease of reassignment, and probably also account for Joan being shorter.

In *Man and Woman, Boy and Girl* (1972), Money and Erhardt referred to Joan's 'tomboyish traits' in passing, but focused on the ways she conformed to the stereotypes of female behaviour. No mention was made of the rejection and teasing she'd encountered in school. Significantly, when Joan had reached her teens she was an unhappy adolescent, with few friends, uncertain about her gender, and maintaining that boys 'had a better life'.

When Joan was 12, she (reluctantly) began taking oestrogen, and soon breast development and fat around the hips and waist began to appear. But she resisted any further (vaginal) surgery. By age 14, the female hormones were now in competition with her male hormonal system. She decided to stop living as a girl, changed her name back to John, and underwent sex change surgery just before his sixteenth birthday. A rudimentary penis was constructed, but this neither resembled nor performed like the real thing. His popularity with girls caused him terrible distress and unhappiness, and at 18 he tried to commit suicide on two separate occasions.

At 21, he had a second operation on his penis, which produced a significant improvement. Two years later, he met and fell in love with a single mother of three children – they married in 1990 (Colapinto, 2000). Colapinto met him in 1997 (he was then 31 years old and renamed David Reimer):

> The strongest impression I was left with was of John's intense, unequivocal masculinity. His gestures, walk, attitudes, vocabulary – none of them betrayed the least hint that he had been raised as a girl ... when conversation turns to his childhood ...

his voice ... takes on a tone of aggrievement and anger, and he tends to drop the pronoun 'I' from his speech, replacing it with the distancing 'you' – almost as if he were speaking about someone else altogether. Which, in a sense, he is.

He committed suicide in 2004.

ASK YOURSELF...

- What conclusions could you draw from the case of Joan/John?

◎ He'd collaborated on a book with a well-known New York journalist and appeared on the Oprah Winfrey show, declaring that Money had consigned him to a childhood of humiliation, confusion and misery (Usborne, 2004). These findings indicate that biology had ultimately proven irrepressible: gender identity is 'hardwired' into the brain virtually from conception (Diamond, 1982; Diamond & Sigmundson, 1997). As Diamond (in Usborne, 2004) says:

David didn't give permission for what was done to him. Even though he didn't have a penis, he still knew he was male.

Agreeing with Diamond, Reiner (in Fletcher, 1997) argues that:

The organ that appears to be critical to psychosexual development and adaptation is not the genitalia but the brain.



David Reimer in 2000

Sociobiological theory

Sociobiologists (evolutionary theorists: see Chapter 2) argue that gender has gradually evolved over the course of human development as part of our broader adaptation to the environment (Lumsden & Wilson, 1983). Males and females have developed different roles as a function of their respective contributions to reproduction and domestic labour (Wilson, 1978; Hoyenga & Hoyenga, 1979). The relatively greater physical strength, lung capacity, and so on of males make them better suited to hunting and defending territory and family. Females' child-bearing and milk-producing capacities make them ideally suited to child care and other nurturant roles.

According to *parental investment theory* (PIT) (Kenrick, 1994), females invest considerably more in reproduction than do males. Society came to be organised in sexually exclusive domestic partnerships as a way of meeting the female's needs for protection, and the male's need for preventing his mate from mating with other males. The consequence of this was the evolution of different courtship displays and roles (such as 'playing hard to get'), which are still evident in many (including western) cultures. According to Buss (1994), what females universally find attractive in males are the characteristics associated with the provision of resources. Men, by contrast, see physical beauty as being of greatest importance (see Chapter 28).

Evaluation of the sociobiological approach

CRITICAL DISCUSSION 36.2 Evolutionary psychology, sexual dimorphism and rape

- Like other *evolutionary psychologists*, Cosmides and Tooby (in Horgan, 1995) see the mind as comprising a number of specialised mechanisms or modules, designed by natural selection to solve problems that faced our hunter–gatherer ancestors, such as acquiring mates, raising children and dealing with rivals. The solutions often involve emotions such as lust, fear, affection, jealousy and anger.
- Evolutionary psychology is mainly concerned with *universal* features of the mind, but individual differences are seen as the expression of the same universal human nature as it encounters different environments. The crucial exception to this rule is *gender:* natural selection has constructed the mental modules of men and women very differently as a result of their divergent reproductive roles.
- Buss (1994) claims that there's a distinct gender gap in 'mate choice', and Thornhill & Wilmsen-Thornhill (1992) argue that human sexual psychology is *dimorphic* (the respective adaptations differ in men and women). The sexes differ in their feelings about whether, when and how often it's in their interests to mate.
- Because women are more selective about their mates and more interested in evaluating them and delaying intercourse, men, to get sexual access, must often break through female resistance. According to Thornhill and Wilmsen-Thornhill's *'rape adaptation hypothesis'*, during human evolutionary history there was enough directional

selection on males in favour of traits that solved the problem of forcing sex on a reluctant partner to produce a psychological tendency specifically towards rape.

- In other words, not only does this hypothesis recast an oppressive form of behaviour in a much more positive light (it's 'adaptive'), but it also represents it as a natural characteristic of men ('they can't help it'). Not surprisingly, it has been condemned as not simply trying to explain men's sexual coercion, but justifying it (Edley & Wetherell, 1995).

◎ The sociobiological approach has been criticised on several grounds. For example, dominance patterns are not, as sociobiological approaches assume, equated with greater aggression. In humans, at least, dominance often relates to status seeking, which implies the role of culturally determined values (Sayers, 1982). Sociobiological approaches to sex differences are also difficult to test: we have only incomplete knowledge about the ways in which our ancestors adapted to their environments. So, our hunches about which characteristics were adaptive and why differences between the sexes evolved are 'educated guesses' at best (see Chapter 2).

Freud's psychoanalytic theory

ASK YOURSELF...

- From what you know of Freud's theory of *psychosexual development,* try to outline his account of gender development (see Chapter 35).

Freud's account of gender development is related to his explanation of moral development which, in turn, is part of his theory of psychosexual development. Up until the resolution of the Oedipus complex, gender identity is assumed to be flexible. Resolution of the Oedipus complex occurs through identification with the same-sex parent, and results in the acquisition of both a superego and gender identity. Like the development of conscience, Freud also saw the development of gender identity as being weaker in girls than boys.

Evaluation of the psychoanalytic approach

There are at least three reasons for doubting a Freudian interpretation of gender identity's development.

1. Children of a particular age don't appear to acquire gender identity in 'one fell swoop' (Krebs & Blackman, 1988).
2. Children who grow up in 'atypical' families (e.g. single-parent or lesbian couples) aren't necessarily adversely affected in terms of their gender identities (Golombok *et al.*, 1983). Indeed, children reared in fatherless families (whether lesbian or heterosexual) appear to have *more secure* attachments (Golombok *et al.*, 1997: see Chapter 32). When children raised in gay or lesbian households are followed up into adulthood, there are no indications that sexual identity or orientation is affected by having two same-sex parents. Studies of the parenting abilities of gays and lesbians indicate they're just as capable, warm and child-oriented as heterosexual parents – sometimes more so (presumably because of their greater motivation in the face of a sceptical and hostile world). The claim that children need a parent of each sex for healthy development isn't supported by the existing evidence (Golombok, 2000).
3. While identification might promote gender identity, children are aware of gender roles well before the age at which Freud believed their Oedipus complex is resolved. For example, boys prefer stereotypically masculine toys (such as trucks) and girls stereotypically feminine toys (such as dolls) in infancy (O'Brien *et al.*, 1983). (See Box 36.2.)

Social learning theory (SLT)

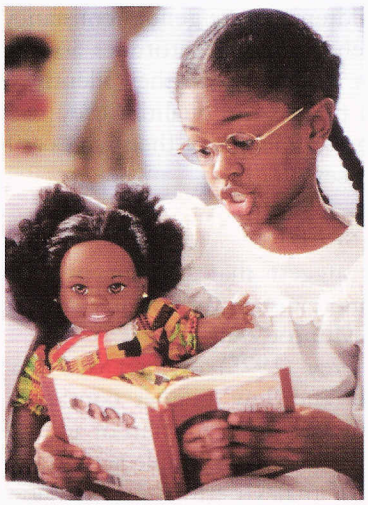
ASK YOURSELF...

- How do you think SLT tries to explain gender development? (See Chapter 35.)

According to *social learning theory* (SLT), one reason girls and boys learn to behave differently is that they're *treated differently* by their parents and others. As the 'baby X' study shows (see page 626), when informed of a child's biological sex, parents and others often react to it according to their gender-role expectations. Thus, girls and boys are often given different toys, have their rooms decorated differently, and are even spoken about in different terms (Rubin *et al.*, 1974).

A consistent and persistent finding is that fathers treat their children in a more gendered way than mothers (Maccoby, 1990). Typically, fathers interact in a more instrumental and achievement-oriented way, and give more attention to their sons, while mothers attend equally to sons and daughters (Quiery, 1998). However, Karraker *et al.* (1995) found that this strong *sex-typing* of infants at birth has declined, and that there were no differences between mothers and fathers in this respect.

SLT also emphasises the roles of *observational learning* and *reinforcement*. By observing others behaving in particular ways and then imitating that behaviour, children receive reinforcement from 'significant others' for behaviours considered to be *sex-appropriate* (Bandura, 1977b). Boys tend to be positively reinforced more for behaviours reflecting independence, self-reliance, and emotional control. But girls tend to be reinforced for dependence, nurturance, empathy and emotional expression (Block, 1979). Fathers tend to reinforce these sex-typed behaviours more than mothers do (Kerig *et al.*, 1993: see above).





Playing with dolls and displaying nurturant behaviour, and playing with guns and displaying assertive, even aggressive, behaviour, conform to female and male gender role expectations/stereotypes respectively. According to social learning theory, children receive parental reinforcement for displaying such gender-appropriate behaviours

Evaluation of SLT

Findings supporting SLT

- Sears *et al.* (1957) found that parents allowed sons to be more aggressive in their relationships with other children, and towards their parents, than daughters. For some mothers, 'being a boy' meant being aggressive, and boys were often encouraged to fight back. Although parents believe they respond in the same way to aggressive acts committed by boys and girls, they actually intervene much more frequently and quickly when girls behave aggressively (Huston, 1983).
- Boys were more likely to imitate aggressive male models than were girls (Bandura *et al.*, 1961, 1963). Children are also more likely to imitate a same-sex model than an opposite-sex model, even if the behaviour is 'sex-inappropriate' (see Chapter 35).
- Although parents are important models, SL theorists are also interested in media portrayals of males and females. A large body of evidence suggests that gender-role stereotypes are portrayed by the media, as well as by parents and teachers (Wober *et al.*, 1987). Moreover, children categorised as 'heavy' viewers of TV hold stronger stereotyped beliefs than 'lighter' viewers (Gunter, 1986).

Findings not supporting SLT

- According to Maccoby & Jacklin (1974), there are no consistent differences in the extent to which boys and girls are reinforced for aggressiveness or autonomy. In fact, there appears to be remarkable uniformity in how the sexes are socialised. This is supported by Lytton & Romney (1991), who found very few sex differences in terms of parental warmth, overall amount of interaction, encouragement of achievement or dependency, restrictiveness and discipline, or clarity of communication.
- Although Bandura *et al.*'s research is often cited, the evidence concerning imitation and modelling is actually inconclusive, and some studies have failed to find that children are more likely to imitate same-sex models than opposite-sex models. Indeed, children have been shown to prefer imitating behaviour that's 'appropriate' to their own sex *regardless* of the model's (Maccoby & Jacklin, 1974).
- The view that TV can impact upon a passively receptive child audience with messages about sex-role stereotyping, and mould young children's conceptions of gender is oversimplistic. For Gunter & McAleer (1997), children respond selectively to particular characters and events, and their perceptions, memories, and understanding of what they've seen may often be mediated by the dispositions they bring with them to the viewing situation. While 'heavy' TV viewers might hold stronger stereotyped beliefs than other children, no precise measures were taken of the programmes they actually watched.
- While modelling plays an important role in children's socialisation, there's no consistent preference for the same-sex parent's behaviour (Hetherington, 1967). Instead, children prefer to model the behaviour of those with whom they have most contact (usually the mother). Also, there's no significant correlation between the extent to which parents engage in sex-typed behaviours and the strength of sex-typing in their children (Smith & Daglish, 1977). However, fathers' adoption of either traditional (sex-typed) or egalitarian attitudes has been found to correlate with four-year-olds' perceptions of sex roles (Quiery, 1998).

Cognitive–developmental theory (CDT)

The cognitive–developmental approach (Kohlberg, 1969; Kohlberg & Ullian, 1974) emphasises the child's participation in developing both an understanding of gender and gender-appropriate behaviour (see Chapter 35).

Children's discovery that they're male or female *causes* them to identify with members of their own sex (*not* the other way round, as psychoanalytic and SL theories suggest). While rewards and punishments influence children's choices of toys and activities, these don't mechanically strengthen stimulus–response connections, but provide children with information about when they're behaving in ways that other people deem appropriate (Bandura, 1977a).

According to CD theorists, young children acquire an understanding of the concepts *male* and *female* in three stages.

Box 36.4 Stages in the development of gender identity

Stage 1 (Gender labelling or basic gender identity): This occurs somewhere around age three (Ruble, 1984) and refers to the child's recognition that it's male or female. According to Kohlberg, knowing one's gender is an achievement that allows us to understand and categorise the world. But this knowledge is fragile, and children don't yet realise that boys invariably become men and girls always become women.

Stage 2 (Gender stability): By age 4–5, most children recognise that people retain their genders for a lifetime. But children still rely on superficial signs (such as the length of a person's hair) to determine their gender (Marcus & Overton, 1978).

Stage 3 (Gender constancy or consistency): At around age 6–7, children realise that gender is *immutable*. So, even if a woman has her hair cut very short, her gender remains constant. Gender constancy represents a kind of *conservation* (see Chapter 34) and, significantly, appears shortly after the child has mastered the conservation of quantity (Marcus & Overton, 1978).



Children of 4–5 might be confused about this person's gender

Once children acquire gender constancy, they come to value the behaviours and attitudes associated with their sex. Only at this point do they identify with the adult figures who possess the qualities they see as being most central to their concepts of themselves as male or female (Perry & Bussey, 1979).

Evaluation of CDT

- Evidence suggests that the concepts of gender identity, stability and constancy occur in that order across many cultures (Munroe *et al.*, 1984).
- Slaby & Frey (1975) divided two- to five-year-olds into 'high' and 'low' gender constancy. The children were then shown a silent film of adults simultaneously performing a series of simple activities. The screen was 'split', with males performing activities on one side and females on the other. Children rated as 'high' in gender constancy showed a marked same-sex bias, as measured by the amount of visual attention they gave to each side of the screen. This supports Kohlberg's belief that gender constancy is a *cause* of the imitation of same-sex models, rather than an effect.
- Children actively construct their gender-role knowledge through purposeful monitoring of the social environment. They engage in *self-socialisation,* rather than passively receiving information (Whyte, 1998).

ASK YOURSELF...

- According to CDT, what is the relationship between gender constancy and the child's gender-appropriate behaviour?

- A major problem for CDT is that it predicts there should be little or no gender-appropriate behaviour before gender constancy is achieved. But even in infancy, both sexes show a marked preference for stereotypical male and female toys (Huston, 1983: see Box 36.2). While such children might have developed a sense of gender identity, they are, as far as CDT is concerned, some years away from achieving gender stability and constancy (Fagot, 1985).

Gender-schematic processing theory (GSPT)

Gender-schematic processing theory (GSPT) addresses the possibility that gender identity *alone* can provide children with sufficient motivation to assume sex-typed behaviour patterns (e.g. Bem, 1985; Martin, 1991). Like SLT, this approach suggests that children learn 'appropriate' patterns of behaviour by observation. However, consistent with CDT, children's active cognitive processing of information also contributes to their sex-typing.

Children learn that strength is linked to the male sex-role stereotype and weakness to the female stereotype, and that some dimensions (including strength–weakness)

are more relevant to one gender (males) than the other (Rathus, 1990). So, a boy learns that the strength he displays in wrestling (say) affects others' perceptions of him. Unless competing in some sporting activity, most girls don't see this dimension as being important. But while boys are expected to compete in sports, girls aren't, and so a girl is likely to find that her gentleness and neatness are more important in the eyes of others than her strength (Rathus, 1990).

According to GSPT, then, children learn to judge themselves according to the traits considered to be relevant to their genders. Consequently, the self-concept becomes mixed with the *gender schemas* of a particular culture which provides standards for comparison. The theory sees gender identity as being sufficient to produce 'sex-appropriate' behaviour. The labels 'boy' and 'girl', once understood, give children the basis for mixing their self-concepts with their society's gender schemas. Children with gender identity will actively seek information about gender schemas, and their self-esteem will soon become influenced by how they 'measure up' to their gender schema (Rathus, 1990: see Chapter 33).



Jane Couch (the 'Fleetwood Assassin'), women's world welterweight boxing champion, after winning her sex discrimination case in 1998 against the British Boxing Board of Control over its refusal to grant her a licence to box professionally

Cultural relativism

This really represents the most direct challenge to the biological approach. If gender differences reflect biological differences, then we'd expect to find the same differences occurring in different cultures. Any differences that exist between cultures with regard to gender roles (*cultural relativism*) support the view that gender role is *culturally determined*.

Margaret Mead (1935) claimed that the traits we call masculine and feminine are completely unrelated to biological sex. Just as the clothing, manner and headdress considered to be appropriate in a particular society, at a particular time, aren't determined by sex, so temperament and gender role aren't biologically but culturally determined. She studied three New Guinea tribes living quite separately from each other within about a 100-mile radius.

- The *Arapesh* were gentle, loving and cooperative. Boys and girls were reared in order to develop these qualities, which in western society are stereotypically feminine. Both parents were said to 'bear a child', and men took to bed while the child was born.
- The *Mundugumor* were ex-cannibals. Both males and females were self-assertive, arrogant, fierce, and continually quarrelling, and they both detested the whole business of pregnancy and child-rearing. Sleeping babies were hung in rough-textured baskets in a dark place against the wall and when they cried, someone would scratch gratingly on the outside of the basket.
- The *Tchambuli* represented the reversal of traditional western gender roles. Girls were encouraged to take an interest in the tribe's economic affairs, and the women took care of trading and food gathering. Men were considered sentimental, emotional, and incapable of making serious decisions, spending much of the day sitting around in groups, gossiping and 'preening' themselves.

However, by 1949, after she'd studied four other cultures (Samoa, Manus, Iatmul and Bali), Mead had rather dramatically changed her views about gender roles. From a rather extreme 'cultural determinism', she now concluded that women were 'naturally' more nurturing than men, expressing their creativity through childbearing and childbirth, and are superior in intellectual abilities requiring intuition. While motherhood is a 'biological inclination', fatherhood is a 'social invention': by implication, societies which encourage a gender role division other than that in which dominant, sexually energetic men live with passive, nurturant women are 'going against nature'. Significantly, by this time she'd given birth to a child of her own (Booth, 1975)!

Are there cultural universals?

A finding which may seem to support Mead in her search for 'natural' differences is that there's no known society in which the female does the fighting in warfare (including the Tchambuli and Arapesh: Fortune, 1939). However, there's more to aggression than warfare. Malinowski (1929), studying the Trobriand Islanders, reported that, in order to foster their tribe's reputation for virility, groups of women would catch a man from another tribe, arouse him to erection and rape him! This 'gang rape' was carried out in a brutal manner, and the women often boasted about their achievement.

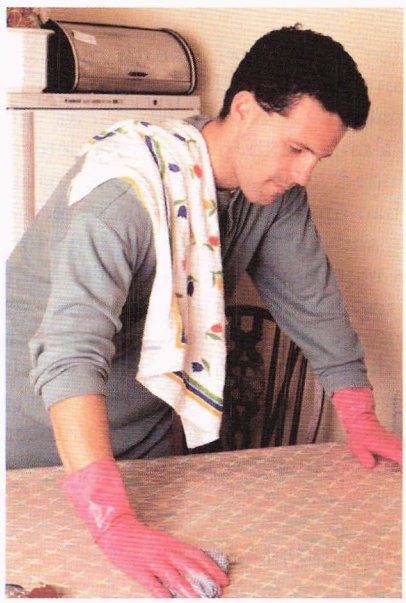
ASK YOURSELF...

- Even if men are, universally, the hunters and war-makers, does this necessarily mean that males are naturally more aggressive than females?

According to Wade & Tavris (1994), early researchers assumed that men are naturally aggressive (and women are naturally nurturant). Consequently, they often defined nurturing in a way that excluded the altruistic, caring activities of men. For example, men can nurture the family by providing food for mother and child, and sometimes by going off to fight in faraway places, sacrificing their lives if necessary, in order to provide a safe haven for their people.

While most cultures distinguish between 'men's' and 'women's' work and while biological factors undoubtedly play some part in the sexual division of labour (see Box 36.2), the content of this work varies enormously between cultures. As Hargreaves (1986) observes, in some cultures:

> ... men weave and women make pots, whereas in others these roles are reversed; in some parts of the world women are the major agricultural producers, and in others they are prohibited from agricultural activity.



What's men's and women's work is a matter of convention

Box 36.4 Are there more than two genders?

- Among the Sakalavas in Madagascar, boys who are thought to be pretty are raised as girls and readily adopt the female gender role. Similarly, the Alentian Islanders in Alaska raise handsome boys as girls; their beards are plucked at puberty and they are later married to rich men. They too seem to adapt quite readily to their assigned gender role.
- Studies of certain Native American peoples reveal the possibility of more than two basic gender roles. For example, the '*berdache*', a biological male of the Crow tribe, simply chooses not to follow the ideal role of warrior. Instead, he might become the 'wife' of a warrior, but he's never scorned or ridiculed by his fellow Crows. (Little Horse in the film *Little Big Man*, starring Dustin Hoffman, was a 'berdache'.)
- The Mohave Indians recognised four distinct gender roles: (i) traditional male; (ii) traditional female; (iii) 'alyha'; and (iv) 'hwame'. The 'alyha' was a male who chose to live as a woman (to the extent of mimicking menstruation by cutting his upper thigh and undergoing a ritualistic pregnancy), and the 'hwame' was a female who chose to become a man.

Western culture has no formally recognised and accepted equivalent of the berdache. However, in recent times, as the economic lives of men and women have become more similar (see Chapter 38), we have at least informally developed some acceptance of berdache-like alternatives. For example, the concept of *androgyny* (Bem, 1974) refers to people who've developed both the 'masculine' and 'feminine' sides of themselves more fully than most. Similarly, the concept of *sexual orientation* implies an awareness that relationships aren't simply an expression of a single inborn norm (Price & Crapo, 1999).

CONCLUSIONS

While every known culture distinguishes between male and female, the evidence for the truth of sex stereotypes is inconclusive. Although anatomical sex is universal and unchangeable, *gender,* which refers to all the duties, rights and behaviours a culture considers appropriate for males and females, is a *social invention*. It's gender that gives us a sense of personal identity as male or female (Wade & Tavris, 1994).

An even stronger argument for the *social construction* of gender comes from studies of societies in which gender reversal is relatively commonplace or, more importantly, where there are more than two genders. All the perspectives discussed in this chapter have contributed to our understanding of that process, and they should be seen as complementary explanations (Whyte, 1998).

CHAPTER SUMMARY

- Feminist psychologists distinguish between **sex/sexual identity** and **gender/gender identity**.
- There's little empirical support for actual gender differences in terms of either aggression or verbal, spatial, or mathematical abilities.

- Biologically, sex refers to **chromosomal sex**, **gonadal sex**, **hormonal sex**, sex of the **internal reproductive structures** and sex of the **external genitalia**. While these are usually highly correlated with each other, in **hermaphroditism/pseudohermaphroditism**, pre- and postnatal disorders produce an inconsistency between these categories.
- Major types of pseudohermaphroditism include **androgen insensitivity syndrome** (AIS)/**testicular feminising syndrome**, **adrenogenital syndrome** (AGS), and **dihydrotestosterone** (DHT)**-deficiency/5-alpha-reductase deficiency**.
- According to the **biological approach**, males and females are biologically programmed for certain activities compatible with gender roles.
- While studies of **hemispheric specialisation** are consistent with some of the claimed male–female differences in cognitive abilities, evidence that the corpus callosum is sexually dimorphic is inconclusive.
- The **empathising-systemising** (E-S) **theory** maintains that female brains are hardwired for empathy and sensitivity towards others, while male brains are hardwired for constructing systems. These differences are reflected in male/female differences from birth, and in adult skills and occupations.
- **Biosocial theory** stresses the **interaction** of social and biological factors. A person's (perceived) biological make-up (such as sex) becomes part of his or her social environment through others' reactions to it.
- Money and Ehrhardt claim that there's a **critical** or **sensitive** period for the development of gender identity. But the case of a **penectomised** boy raised as a girl tend to support the claim that gender identity and role are **biologically determined**.
- According to **sociobiologists**, gender has evolved as part of human beings' broader adaptation to the environment. **Parental investment theory** (PIT) claims that sexually exclusive domestic partnerships meet the female's need for protection and the male's need for preventing his mate from mating with other males.
- **Psychoanalytic theory** sees gender identity as being related to moral and overall psychosexual development. But gender identity develops much more gradually than Freud claimed, and studies of children who grow up in 'atypical' families show that their gender identity isn't adversely affected.
- According to **social learning theory** (SLT), girls and boys learn to behave differently through being **treated differently** by parents and others. SLT also stresses the role of **observational learning** and **reinforcement** for imitating sex-appropriate behaviours.
- Evidence is inconclusive regarding the importance for imitation of the **sex-appropriateness** of a model's behaviour and the model's sex. There's no consistent preference for the same-sex parent's behaviour, but rather for the parent the child spends most time with.
- According to the **cognitive–developmental approach**, children's discovery that they're male or female **causes** them to identify with and imitate same-sex models. Three **stages** in the development of gender identity are **gender labelling/basic gender identity**, **gender stability**, and **gender constancy/consistency**.
- **Gender-schematic processing theory** (GSPT) maintains that gender identity **alone** can provide a child with sufficient motivation to assume sex-typed behaviour. Children learn to judge themselves according to the traits seen as relevant to their genders, resulting in self-concepts that are mixed with the **gender schemas** of a particular culture.
- According to **cultural relativism**, any differences in gender roles between cultures are likely to be **culturally determined**.
- The enormous cultural diversity of the content of men's and women's work, and the existence of more than two genders in some Native American peoples, strongly suggests that gender is **socially constructed**.

Links with other topics/chapters

- Feminist psychology and sociobiology fall at the two extremes of the continuum of the *nature–nurture* (heredity–environment) *debate* (Chapter 50).
- Regarding the *corpus callosum,* it hasn't been clearly established that the number of fibres is the crucial male–female difference (as has been assumed). Also, sex differences in cognitive functioning have yet to be related to the size of the corpus callosum (Kimura, 1993) (Chapter 4).
- The question of male/female differences in aggression/violence is relevant to understanding common reactions to *female murderers* and perpetrators of other *violent crimes* (Chapter 46).
- According to Denmark *et al.* (1988), ignoring studies that fail to produce non-significant sex differences represents a form of *sexism* or *gender bias* in psychological research (Chapter 47). In turn, these constitute *ethical issues,* because of their potential consequences for females (Chapter 48).
- Females' more empathic brains are relevant to understanding gender differences in relation to *prosocial behaviour* (Chapter 30).
- Baron-Cohen (2003a, 2003b) has found that, at birth, girls look longer at a face, and boys look longer at a suspended mechanical mobile (Chapter 16).
- According to Baron-Cohen (2003a, 2003b), people with *autism* may have an extreme male brain (Chapter 40).
- The observation that adults prefer to spend time with babies who respond to them in 'rewarding' ways, and 'demanding' babies tend to receive more attention than 'passive' babies, is consistent with biosocial theory and also illustrates the concept of a *reactive gene-environment correlation* (Chapter 50).

- TV and other media are investigated in relation to both *aggression* (Chapter 29) and *prosocial behaviour* (Chapter 30), as well as sex-role stereotyping.
- Cultural relativism, and the related cultural determinism, represent one extreme end of the *nature–nurture* continuum (Chapter 50).

Normative and non-normative shifts

Puberty: the social and psychological meaning of biological changes

Puberty and body image

Major changes in puberty

Gender differences

The importance of timing

Theories of adolescence

Hall's theory: adolescence as storm and stress

Studies of mental disorder

Studies of delinquent behaviour

Erikson's theory: identity crisis

Does society create identity crisis?

Role confusion

Studies of self-esteem

Marcia's theory: identity statuses

Sociological approaches: generation gap

Parent–adolescent relationships

Peer relationships

Coleman's focal theory: managing one change at a time

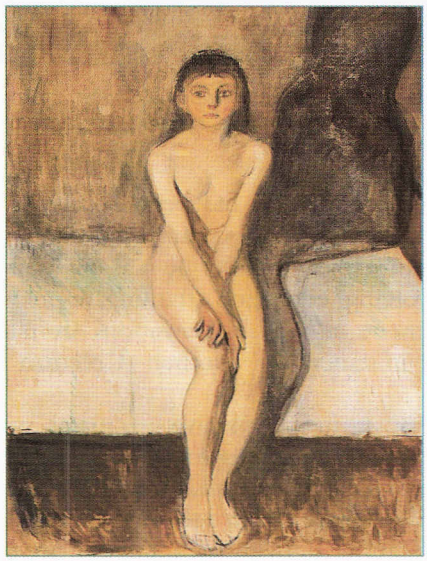
Conclusions

Chapter summary

Links with other topics/chapters

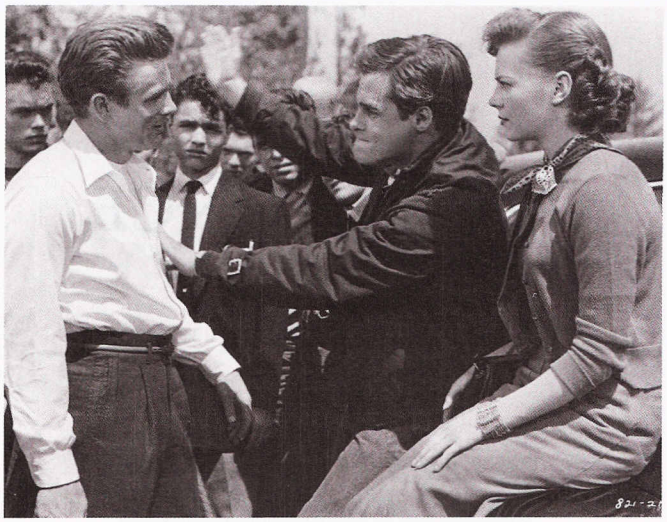
37

ADOLESCENCE



INTRODUCTION AND OVERVIEW

The word 'adolescence' comes from the Latin *adolescere* meaning 'to grow into maturity'. As well as being a time of enormous physiological change, adolescence is also marked by changes in behaviour, expectations, and relationships with both parents and peers. In western, industrialised societies, there's generally no single initiation rite signalling the passage into adulthood. This makes the transition more difficult than it appears to be in more traditional, non-industrialised societies. Relationships with adults in general, and parents in particular, must be renegotiated in a way that allows the adolescent to achieve greater independence. This process is aided by changing relationships with peers.



1950s films such as *Rebel Without A Cause*, starring James Dean (left), have been seen as helping to create the concept of the 'rebellious teenager'

Historically, adolescence has been seen as a period of transition between childhood and adulthood. But writers today are more likely to describe it as one of *multiple transitions,* involving education, training, employment and unemployment, as well as transitions from one set of living circumstances to another (Coleman & Roker, 1998).

This change in perspective in many ways reflects changes in the adolescent experience compared with those of previous generations: it starts five years earlier, marriage takes place six to seven years later than it did, and cohabitation, perhaps as a prelude to marriage, is rapidly increasing (Coleman & Hendry, 1990). Passage into adulthood may also be deferred by the delay in acquiring an income: not only has there been an extension in compulsory education, but pressure on the workforce to become more highly skilled places a premium on continuing education (Hendry, 1999).

Coupled with these 'adulthood-postponing' changes, in recent years adolescents have enjoyed greater self-determination at steadily younger ages. Yet this greater freedom carries with it more risks and greater costs when errors of judgement are made. As Hendry (1999) says:

... 'dropping out' of school, being out of work, teenage pregnancy, sexually transmitted diseases, being homeless, drug addiction and suicide, are powerful examples of the price that some young people pay for their extended freedom ...

NORMATIVE AND NON-NORMATIVE SHIFTS

ASK YOURSELF...

- What kinds of transitions do adolescents in western societies experience?
- Are these necessarily the same for all adolescents?

One way of categorising the various transitions involved in adolescence is in terms of *normative* and *non-normative shifts* (Hendry & Kloep, 1999; Kloep & Hendry, 1999).

- *Normative, maturational shifts* include the growth spurt (both sexes), menarche (first menstruation), first nocturnal emissions ('wet dreams'), voice breaking (boys), changes in sexual organs, beginning of sexual arousal, changed romantic relationships, gender-role identity, changed relationships with adults, increasing autonomy and responsibility.
- *Normative, society-dependent shifts* include the change from primary to secondary school, leaving school, getting started in an occupation, acquiring legal rights for voting, sex, purchasing alcohol, driving licence, military service, and cohabitation.
- *Non-normative shifts* include parental divorce, family bereavement, illness, natural disasters, war, incest, emigration, disruption of peer network, risk-taking behaviours, 'disadvantage' (because of gender, class, regional or ethnic discrimination), physical and/or mental handicap.

According to Kloep & Hendry (1999):

Although all adolescents have to cope with the psychosocial challenges associated with their maturing body, new relationships with parents and peers, with school and the transitions toward employment, a growing number encounter additional problems like family disruption, economic deprivation or social or cultural changes ...

A normative shift may become non-normative, if, say, there are other circumstances that cause a normal developmental 'task' to become more difficult. An example would be the unusually early or late onset of puberty.

PUBERTY: THE SOCIAL AND PSYCHOLOGICAL MEANING OF BIOLOGICAL CHANGES

Puberty and body image

Adjusting to puberty is one of the most important adjustments that adolescents have to make (Coleman & Hendry, 1990). Even as a purely biological phenomenon, puberty is far from being a simple, straightforward process. While all adolescents experience the same bodily changes (see Box 37.1 and Figure 37.1, page 637), the sequence of changes may vary within individuals (*intraindividual asynchronies:* Alsaker, 1996). For example, for some girls menstruation may occur very early on in puberty, while for others it may occur after most other changes (e.g. growth spurt, breast development) have taken place.

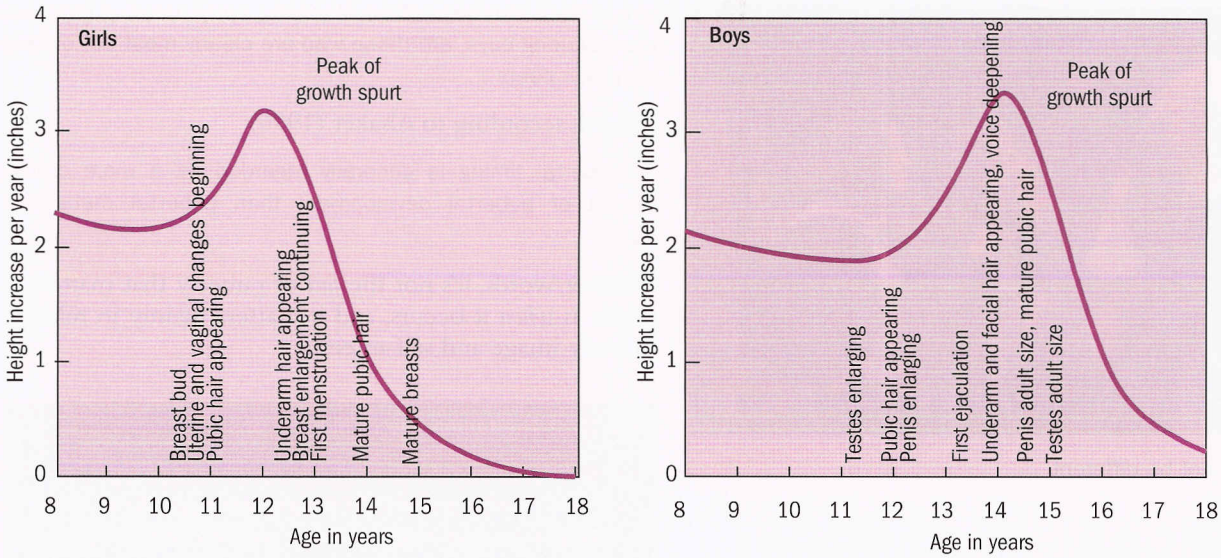


Figure 37.1 The development of secondary sex characteristics. The curved lines represent the average increase in height from eight to 18 years of age. The characteristics shown may occur earlier or later in a person's development, but usually occur in the order shown (based on Tanner, 1978, and Tanner & Whitehouse, 1976). Reproduced with the permission of the copyright holders, Castlemead Publications.

Major changes in puberty

Physiologically, puberty begins when the seminal vesicles and prostate gland enlarge in the male, and the ovaries enlarge in the female. Both males and females experience the *adolescent growth spurt*. Male *secondary sex characteristics* include growth of pubic and then chest and facial hair, and sperm production. In females, breast size increases, pubic hair grows and menstruation begins.

Box 37.1 Adolescents' brains

- According to some neuroscientists, the brain undergoes some fundamental restructuring during adolescence, just as it does during the earliest years of childhood. While the *plasticity* of the infant's and young child's brain is widely accepted (see Chapter 4), this has traditionally been seen as stopping at puberty.
- However, two MRI studies, one *longitudinal* (which followed up the same set of youngsters over several years: Giedd *et al.*, 1999), the other *cross-sectional* (which compared a group of 14-year-olds with a group in their mid-twenties: Sowell *et al.*, 1999) suggest otherwise.
- Areas of the cortex that deal with more basic functions, such as sensory and motor processing, do indeed stabilise in early childhood. But the parietal and frontal lobes, which are specialised for visuospatial and 'executive functions' (e.g. planning and self-control) respectively, show a *growth surge* between the ages of 10 and 12.
- This sudden 'bulking up' is then followed by an equally dramatic *reduction* in size, which continues right through the teenage years and into the early twenties. The grey-matter density decreases, indicating that the number of synaptic connections have become fewer (consistent with the theory that a mature brain involves the 'pruning' of connections in order to strengthen those that remain).It stops only when these areas have reached their adult proportions.
- This late shrinkage is taken to be a sign of maturation. As McCrone (2000) puts it:

  ... brains are believed to develop mainly by a pruning of their neural thickets to form orderly processing paths.

- According to Rapoport (in Connor, 2004):

  One could speculate that some of the more immature aspects of adolescent behaviour may be due to the lack of maturity of some parts of the frontal lobes of the brain.

(Based on McCrone, 2000)

According to Davies & Furnham (1986), the average adolescent isn't only sensitive to, but also critical of, his or her changing physical self. Because of gender and sexual development, young people are inevitably confronted, perhaps for the first time, by cultural standards of beauty in evaluating their own body images (via the media and the reactions of others).This may produce a *non-normative shift* in the form of dieting practices, leading to eating disorders (see Chapter 44). Young people may be especially vulnerable to teasing and exclusion if they're perceived by their peers as over- or under-weight (Kloep & Hendry, 1999).



The need to not be different

Gender differences

ASK YOURSELF...

- Do you consider puberty to be a more difficult transition for boys or girls *in general?*
- Why?

While puberty may be a normative, maturational shift, it may be a more difficult transition for girls than boys. This is because of the *subjective meaning* of bodily change (what it means for the individual), which mirrors the *sociocultural significance* of puberty (its significance for society). According to the *cultural ideal hypothesis* (CIH) (Simmons & Blyth, 1987), puberty will bring boys *closer* to their physical ideal (an increase in muscle distribution and lung capacity produces greater stamina, strength and athletic capacities), while girls move *further away* from theirs.

For girls, who begin puberty on average two years ahead of boys, it's normal to experience an increase in body fat and rapid weight gain, thus making their bodies less like the western cultural ideal of the thin, sylph-like supermodel. In addition, they have to deal with menstruation, which is negatively associated with blood and physical discomfort (Crawford & Unger, 1995).

The importance of timing

If the CIH is valid, it follows that *early maturing boys* will be at an *advantage* relative to their 'on-time' and late-maturing peers (they'll be moving faster towards the male ideal). By the same token, *early maturing girls* will be at a *disadvantage* (they'll be moving faster away from the female ideal). As Bergevin *et al.* (2003) put it:

> ... girls who enter puberty early relative to other girls are typically far ahead of virtually all boys. Likewise, boys who enter puberty late are far behind most boys and behind almost all girls. These two sets of adolescents, early-maturing girls and late-maturing boys, are those who are clearly most out of step with their peers ...

Indeed, according to Alsaker (1996):

> ... pubertal timing is generally regarded as a more crucial aspect of pubertal development than pubertal maturation itself.

In other words, it's not the *fact* of puberty that matters as much as *when* it occurs, and it matters mainly in relation to body image and self-esteem.

Box 37.2 The falling age of puberty onset

- One in six girls reaches puberty by the age of eight, compared with one in 100 a generation ago. Also, 1 in 14 eight-year-old boys has pubic hair (an early indicator of puberty), compared with 1 in 150 of their fathers' generation.
- Bristol University's Institute of Child Health tracked the development of 1150 children from birth. It's the first study of puberty in Britain since the 1960s (see Figure 37.1). Not only are children starting puberty earlier, but it's lasting longer. The reasons are unclear, but likely causes are higher oestrogen levels in mothers, diet, lifestyle, and pollution. There could also be a genetic link, since the mothers of girls who begin puberty earlier also matured earlier.
- Separate research has found that the average age of menarche has fallen below 13 in Britain for the first time. It's now 12 years, 10 months, compared with 13 years, 6 months in 1969.
- These findings mean that children could be developing sexually before they have the emotional maturity to deal with the possible consequences.

(Based on Peek, 2000)

ASK YOURSELF...

- A common finding is that early-maturing girls and late-maturing boys suffer lower self-esteem. Why do you think this might be?

Box 37.3 Why do early-maturing girls and late-maturing boys feel less good about themselves?

- One popular explanation is the *deviancy hypothesis* (DH), according to which those who are 'off-time' in physical maturation are socially deviant compared with peers of the same age and gender (Wichstrom, 1998). Since girls begin puberty on average two years before boys, early-maturing girls are the first to enter this deviant position, followed by late-maturing boys.

- An alternative explanation is the *developmental readiness hypothesis* (DRH) (Simmons & Blyth, 1987). In the case of early or sudden puberty, too little time will have been spent on ego development during latency, with early maturing girls once more being most affected. (This explanation is similar to Coleman's *focal theory:* see page 646.)
- As far as the CIH is concerned, the suggestion that the pubertal girl moves further away from the western stereotyped female ideal may *not* be true. *Both* boys and girls move closer to their ideals, provided they don't put on excessive weight (Wichstrom, 1998).

According to Wichstrom, the CIH is sensitive to changes in time and context. For example, in Norway there may be less emphasis on stereotypical male stature compared with the USA and UK. Perhaps also the embarrassment and negative affect experienced by American girls when starting their periods and becoming sexually responsive is less prevalent among Norwegian girls, due to relatively greater openness about adolescent sexuality (Wichstrom, 1998).

THEORIES OF ADOLESCENCE

Hall's theory: adolescence as storm and stress

This is probably the earliest formal theory of adolescence. Influenced by Darwin's evolutionary theory, Hall (1904) argued that each person's psychological development *recapitulates* (repeats/recaptures) both the biological and cultural evolution of the human species. He saw adolescence as a time of 'storm and stress' (or *Sturm und Drang*), which mirrors the volatile history of the human race over the last 2000 years.

Some evidence suggests that emotional reactions are more *intense* and *volatile* during adolescence compared with other periods of life: see Key Study 37.1). However, more important indicators of storm and stress are (a) mental disorder, and (b) delinquent behaviour.

KEY STUDY 37.1 Volatile adolescents (Csikszentmihalyi & Larson, 1984)

- Seventy-five Chicago-area high-school students from diverse social and racial backgrounds were asked to wear electronic pagers for a week. Every two hours, the pager signalled to the students that they were to write a description of what they were doing and how they felt about it.
- After a week, they filled out questionnaires about both their general moods and their specific mood during particular activities.
- About 40 per cent of waking time was spent pursuing leisure activities, the other 60 per cent being more or less equally divided between 'maintenance activities' (such as commuting and eating) and 'productive activities' (such as studying and working).
- Particularly revealing were the adolescents' extreme mood swings, from extreme happiness to deep sadness (and vice versa) in less than an hour. Adults usually require several hours to reach the same emotional peaks and troughs.

Studies of mental disorder

Several studies have found that *early maturing girls* score higher on measures of depressive feelings and sadness (e.g. Alsaker, 1992; Stattin & Magnusson, 1990), although this was true only when the measures were taken before or simultaneously with changing schools (Petersen *et al.*, 1991). They've also been reported to have more psychosomatic (psychophysiological) symptoms (e.g. Stattin & Magnusson, 1990), to display greater concerns about eating (e.g. Brooks-Gunn *et al.*, 1989), and to score higher on Offer's psychopathology scale (e.g. Brooks-Gunn & Warren, 1985).

As far as *early maturing boys* are concerned, the evidence is much more mixed (Alsaker, 1996). While early maturation is usually found to be advantageous, it's also been found to be associated with more psychopathology (e.g. Petersen & Crockett, 1985), depressive tendencies, and anxiety (e.g. Alsaker, 1992).

KEY STUDY 37.2 The 'Isle of Wight' study (Rutter *et al.*, 1976)

- This involved a large, representative sample of 14–15-year-olds (more than 2000), whose parents and teachers completed a behaviour questionnaire about them.
- More detailed data were obtained from two subsamples: (i) 200 randomly selected from the total population; (ii) 304 with extreme scores on the teacher/parent questionnaires (suggesting 'deviant' behaviour).
- Those in both subsamples were given questionnaires and tests, and interviewed by psychiatrists. The major findings regarding rates of psychiatric disorder among the adolescents, compared with a sample of ten-year-olds and the adolescents' parents, are shown in Table 37.1.

Table 37.1 Percentage of ten-year-olds, 14–15-year-olds, and the latter's parents, displaying psychiatric disorder

	Ten-year-olds	14–15-year-olds	Adults (parents)
Males	12.7	13.2	7.6
Females	10.9	12.5	11.9

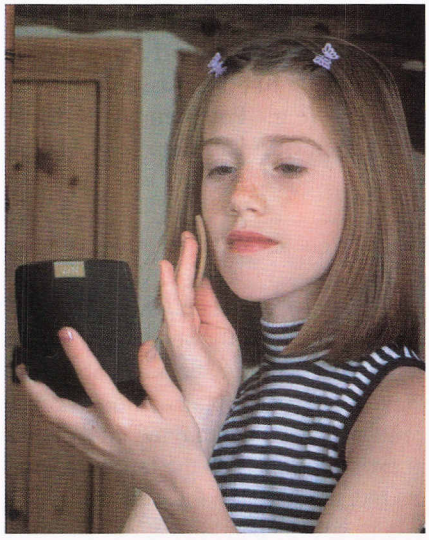
According to Rutter *et al.* (1976):

- there's a rather modest peak in psychiatric disorders in adolescence

- although severe clinical depression is rare, some degree of inner turmoil may characterise a sizeable minority of adolescents. While it's not a myth, neither should it be exaggerated
- a substantial proportion of those adolescents with psychiatric problems had had them since childhood; also, when problems did first appear during adolescence, they were mainly associated with stressful situations (such as parents' marital discord):

... adolescent turmoil is fact, not fiction, but its psychiatric importance has probably been overestimated in the past ... (Rutter *et al.*, 1976)

In western societies, while some adolescents may display affective disturbances or disorders, it's a relatively small minority who'll show clinical depression or report 'inner turmoil' (Compas *et al.*, 1995). Instead, the majority worry about everyday issues, such as school and examination performance, finding work, family and social relationships, self-image, conflicts with authority, and the future generally (Gallagher *et al.*, 1992).



Pre-teens are growing up faster than ever before, and early-maturing girls are most at risk of mental disorder and delinquency

Studies of delinquent behaviour

Caspi *et al.* (1993) studied all the children born in Dunedin, New Zealand between April 1972 and March 1973, following them up every two years from ages 3 to 15. Compared with on-time (menarche 12.5–13.5 years) and late maturers (after 13.5), early maturing girls were more at risk for:

- *early delinquency* (breaking windows, getting drunk, making prank phone calls, stealing from other pupils at school)
- *familiarity with delinquent peers* (having friends or knowing others who engaged in these activities), and
- *delinquency* (shoplifting, car theft, smoking marijuana, using weapons).

However, the risk for early delinquency was greater only in mixed-sex schools, and (as with a sample of Swedish girls studied by Magnusson *et al.*, 1985) early maturers were likely to mix with older peers. As for boys, off-time (early and late) maturation has been shown to be related to alcohol consumption, with late maturers also being at risk for later alcohol problems (Anderson & Magnusson, 1990).

Erikson's theory: identity crisis

Erikson (1963) believed that it's human nature to pass through a genetically determined sequence of *psychosocial stages,* spanning the whole lifespan. Each stage involves a struggle between two conflicting personality outcomes, one of which is positive (or *adaptive*), while the other is negative (or *maladaptive*). Healthy development involves the adaptive outweighing the maladaptive.

The major challenge of adolescence is to establish a strong sense of *personal identity.* The dramatic onset of puberty (combined with more sophisticated intellectual abilities: see Chapter 34) makes adolescents particularly concerned with finding their own personal place in adult society.

In western societies adolescence is a *moratorium,* an authorised delay of adulthood, which frees adolescents from most responsibilities and helps them make the difficult transition from childhood to adulthood.



The Jewish bar mitzvah marks the 13-year-old boy's entry into manhood. But to the rest of society, he's still just a teenager

Although this is meant to make the transition easier, it can also have the opposite effect. Most of the societies studied by cultural anthropologists have important public ceremonies to mark the transition from childhood to adulthood. This is in stark contrast to western, industrialised nations, which leave children to their own devices in finding their identity. Without a clearly defined procedure to follow, this process can be difficult – for both adolescents and their parents (see *Generation gap* below).

Does society create identity crisis?

ASK YOURSELF...
- Can you think of any inconsistencies or contradictions that adolescents face between different aspects of their development?
- How do they perceive their social status?

As well as the perceived absence of 'rites of passage' in western society, a problem for both adolescents and their parents is the related lack of consensus as to where adolescence begins and ends, and precisely what adolescent rights, privileges and responsibilities are. For example, the question 'When do I become an adult?' elicits a different response from a teacher, doctor, parent and police officer (Coleman, 1995).

The 'maturity gap' refers to the incongruity of achieving biological maturity at adolescence without simultaneously being awarded adult status (Curry, 1998). According to Hendry & Kloep (1999):

> ... young people, as they grow up, find themselves in the trap of having to respond more and more to society's demands in a 'responsible' adult way while being treated as immature and not capable of holding sound opinions on a wide range of social matters.

One possible escape route from this trap is *risk-taking behaviour* (see below and Critical Discussion 37.1, page 642). As well as having to deal with the question 'Who am I?', the adolescent must also ask 'Who will I be?'. Erikson saw the creation of an adult personality as achieved mainly through choosing and developing a commitment to an occupation or role in life. The development of *ego identity* (a firm sense of who one is and what one stands for) is positive, and can carry people through difficult times.

When working with psychiatrically disturbed soldiers in the Second World War, Erikson coined the term *identity crisis* to describe the loss of personal identity which the stress of combat seemed to have caused. Some years later, he extended the use of the term to include:

> severely conflicted young people whose sense of confusion is due ... to a war within themselves.



Boy soldiers in Butembo, Zaire, fighting against the regime of President Mobutu Sese Seko

Role confusion

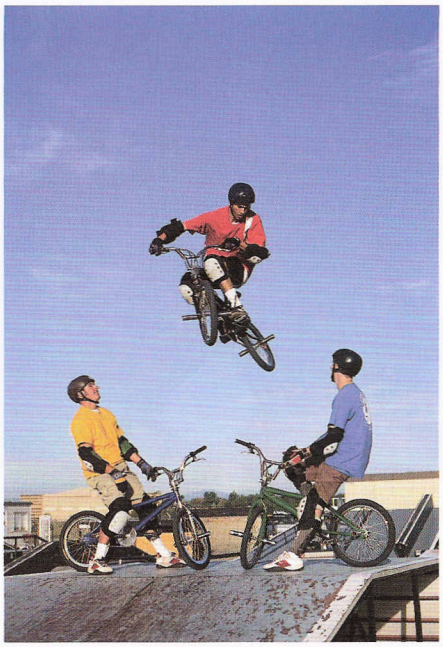
Failure to integrate perceptions of the self into a coherent whole results in *role confusion,* which, according to Erikson, can affect several areas of life, as described below.

- *Intimacy:* a fear of commitment to, or involvement in, close relationships, arises from a fear of losing one's own identity. This may result in stereotyped and formalised relationships, or isolation.
- *Time perspective:* the adolescent is unable to plan for the future or retain any sense of time. It's associated with anxieties about change and becoming an adult.
- *Industry:* difficulty in channelling resources in a realistic way into work or study, both of which require commitment. As a defence, the adolescent may find it impossible to concentrate, or become frenetically engaged in a single activity to the exclusion of all others.
- *Negative identity:* engaging in abnormal or delinquent behaviour (such as drug-taking, or even suicide) as an attempt to resolve the identity crisis. This extreme position, which sets such adolescents apart from the crowd, is preferable to the loneliness and isolation that come with failing to achieve a distinct and more functional role in life ('a negative identity is better than no identity').

Related to Erikson's claims about negative identity is *risk-taking behaviour.* Hendry (1999) asks if risk-taking is:

> ... part of the psychological make-up of youth – a thrill-seeking stage in a developmental transition – a necessary rite of passage en route to the acquisition of adult skills and self-esteem ...

Many teenagers seek out excitement, thrills and risks as earnestly as in childhood, perhaps to escape a drab existence, or to exert some control over their own lives and to achieve *something.*



Thrill seeking: a rite of passage into adulthood?

CRITICAL DISCUSSION 37.1 Sex and drugs

- Traditionally, what parents of teenagers have most feared is that their children will engage in (particularly unprotected) sex and (especially hard) drugs. Recent research suggests that they can feel a little less fearful about both.
- Figures for 1998 showed that the rate of teenage pregnancies was at its highest for almost a decade (47 per 1000 girls under 18 – 101,500 – compared with 45.6 per 1000 in 1991), with Britain having the highest rate in Europe. Pregnant teenagers are also increasingly likely to opt for abortion.
- However, teenage pregnancies in England *fell* between 1998 and 2001 by 9 per cent. Although they rose again slightly in 2002, they were still lower among 14–16-year-olds than in 1992. This recent fall probably reflects more teenagers actually using protection. Pill use soared by more than a third among 16–17-year-olds between 1998 and 2002.
- A recent survey of 2600 15–16-year-old boys and girls shows that use of illegal drugs among British youngsters has dropped for the first time since the 1960s. An exception is girls in Northern Ireland. Figures for 1999 show a 'startling' turnaround since 1995, when UK teenagers had the highest rates of drug use in the world. Certain drugs, such as ecstasy, have acquired a bad name and have gone out of fashion. Nevertheless, drug use is widespread, and heroin use has actually *increased* (although it remains a minority choice).

(Based on Boseley, 2000; Hinsliff & Revill, 2004; Norton, 2000b; Vasagar, 2000)

For some, delinquency may be the solution: it could actually be *adaptive* as a way of facilitating self-definition and expressing autonomy (Compas *et al.*, 1995).

According to Bergevin *et al.* (2003):

> ... One of the challenges of the self in adolescence is with identifying the ways that one is unique and how one is similar to others. Maintaining a sense of individuality while trying to fit into the group is an important task for adolescents. Emphasising differences can lead to loneliness and alienation, while emphasising similarities may impede the development of autonomy.

Such conflict seem to be largely absent in societies where the complete transition to adulthood is officially approved and celebrated at a specific age, often through a particular ceremony. These enable both the individual and society to adjust to change and enjoy a sense of continuity (Price & Crapo, 1999).

CROSS-CULTURAL STUDY 37.1

Initiation into adulthood in non-western cultures

- Cohen (1964) looked at 45 non-industrialised societies which held adulthood ceremonies. In societies where adult skills were hard and dangerous, or where father–son relationships were weak but men had to cooperate in hard work, male initiation rituals were dramatic and painful. They allowed the boy to prove his manhood to the community – and to himself.
- Sometimes they're designed to give boys strength, often by associating them with animals or plants. For example, in the Merina of Madagascar, the boy is associated with the banana tree, which bears much fruit resembling the erect penis (an ideal symbol of virility and fertility). The to-be-initiated boy is removed from his mother's home (a symbol of his attachment to her), before being circumcised in the company of men.
- Brown (1963) described 'rites of passage' for girls in 43 societies from all major regions of the world. They most commonly occur where young girls continue to live and work in their mothers' home after marriage, but they also sometimes occur even when young women permanently leave home, and here they involve genital operations or extensive tattooing. These dramatically help the girl understand that she must make the transition from dependent child to a woman, who'll have to fend for herself in a male-dominated environment (Price & Crapo, 1999).
- In recent years, *infibulation* (the most extreme form of female circumcision) has become a global human rights issue. Its purpose is to preserve the virginity of young girls before marriage, and to tame the disturbing power of women. In many traditional Islamic countries, especially Sudan, Ethiopia and Somalia, millions of young girls continue to undergo painful and risky genital operations.

Although the act of infibulation may, from a western perspective, deindividualise and depersonalise women:

... it acts as a transition or a rite of passage to a greater female adult collective; one where women hold relatively few advantages in a male-dominated world. It may in fact be one of the few positive status markers for women in traditional Islamic societies ... (Price & Crapo, 1999)



Xhosa boys in Bisho, South Africa, singing traditional manhood songs as part of a six-week-long ceremony, which begins with circumcision

ASK YOURSELF...

- Do you agree with Price and Crapo's comments about female circumcision?
- Is our condemnation of such practices simply a reflection of western values, or are there universal principles and standards that apply regardless of who's being judged and who's doing the judging?

Segall *et al.* (1999) maintain that tension and some antisocial behaviour are only to be expected in western societies, due to the much longer adolescent and youth period:

... without a clear marking by ritual, no or little productive role or community participation, no child-rearing duties, and distance from observing adult activities.

According to Coleman & Roker (1998), an important trend in adolescence research is an increasing focus on identity development among ethnically diverse populations, such as young black women (e.g. Robinson, 1997) and mixed-race young people (Tizard & Phoenix, 1993). Coleman and Roker believe that notions of identity and identity formation are likely to become more central to the study of adolescence as this life stage becomes longer and more fragmented, and entry into adulthood becomes more problematic.

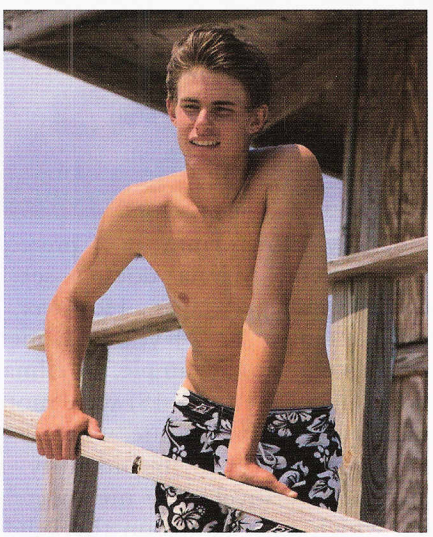
Studies of self-esteem

Tests of Erikson's theory have typically used measures of self-concept (especially *self-esteem*) as indicators of crisis. Girls' dissatisfaction with their appearance begins during puberty, along with a decline in self-esteem (Crawford & Unger, 1995). Comparisons between *early- and late-maturing girls* indicate that dissatisfaction with looks is associated with the rapid and normal weight gain that's part of growing up (Attie & Brooks-Gunn, 1989; Blyth *et al.*, 1981).

Early maturers have a less positive body image, despite the fact that they date more and earlier. Also, sexual activity is more problematic for adolescent girls (as it is for females in general): there are persisting double standards regarding sex (as reflected in the terms 'slag' and 'stud' for sexually active females and males respectively), together with differential responsibility for contraception and pregnancy (see Critical Discussion 37.1).

However, Offer *et al.* (1988) deny there's any increase in disturbance of the self-image during early adolescence. Although such disturbance is more likely in early than late adolescence, only a very small proportion of the total adolescent population is likely to have a negative self-image or very low self-esteem (Coleman & Hendry 1990).

By contrast, *early maturing boys* feel more attractive (Tobin-Richards *et al.*, 1983) and tend to be more satisfied with their bodies, looks, and muscle development (Blyth *et al.*, 1981; Simmons & Blyth, 1987). However, Alsaker (1996) refers to two studies, which have found a correlation between pubertal boys' dissatisfaction with their bodies and the development of pubic and body hair. She asks if this reflects some contemporary images of men in advertisements, and a new trend for men to shave their bodies and be *less* hairy.



American tennis player Andy Roddick relaxing in Miami

Most of these (and other similar) studies have been conducted in the USA, UK, and other English-speaking countries. But a study of a very large, nationally representative Norwegian sample found that the global self-esteem of both late-maturing boys and girls suffered, while early and on-time maturers (of both sexes) enjoy equally high self-esteem (Wichstrom, 1998).

Marcia's theory: identity statuses

In an extension of Erikson's work, Marcia (1980) proposed four *statuses* of adolescent identity formation, which characterise the search for identity. A mature identity can be achieved only if an individual experiences several crises in exploring and choosing between life's alternatives, finally arriving at a *commitment* or *investment of the self* in those choices.

Box 37.4 The four identity statuses proposed by Marcia (1980)

Table 37.2 Four identity statuses as defined by high/low commitment and high/low crisis

		Degree of crisis	
		High	**Low**
Degree of commitment to particular role/values	**High**	Identity achievement	Foreclosure
	Low	Moratorium	Diffusion (or confusion)

Diffusion/confusion: The individual hasn't really started thinking about the issues seriously, let alone formulated any goals or made any commitment. (This represents the *least mature* status.)

Foreclosure: The individual has avoided the uncertainties and anxieties of crisis by quickly and prematurely committing to safe and conventional (parental) goals and beliefs. Alternatives haven't been seriously considered.

Moratorium: This is the height of the crisis as described by Erikson. Decisions about identity are postponed while the individual tries out alternative identities, without committing to any particular one.

Identity achievement: The individual has experienced a crisis but has emerged successfully with firm commitments, goals and ideology. (This represents the *most mature* status.)

Although identity moratorium is a prerequisite for identity achievement, Marcia doesn't see the four statuses as Erikson-type stages. However, evidence suggests that, amongst 12–24-year-old men, they're broadly age-related. For example, Meilman (1979) reported that younger men (12–18) were more likely to experience diffusion or foreclosure, whereas older men were increasingly likely to be identity achievers. Irrespective of age, relatively few men were achieving moratorium, which casts doubt on the validity of the theory.

Several *longitudinal* studies have indicated clear patterns of movement from foreclosure and diffusion to moratorium and achievement (Kroger, 1996). However, when applied to females, even Marcia (1980) accepts that his statuses work 'only more or less'.

Sociological approaches: generation gap

Sociologists see *role change* as an integral aspect of adolescent development (Coleman, 1995). Changing school or college, leaving home, and beginning a job, all involve new sets of relationships, producing different and often greater expectations. These expectations themselves demand a substantial reassessment of the self-concept and speed up the socialisation process. Some adolescents find this problematic because of the wide variety of competing socialising agencies (such as the family, mass media and peer group), which often present *conflicting* values and demands (see discussion above of the identity crisis).

Sociologists also see socialisation as being more dependent on the adolescent's *own generation* than on the family or other social institutions (*auto-socialisation:* Marsland, 1987). As Marsland says:

> The crucial meaning of youth is withdrawal from adult control and influence compared with childhood ...

Young people withdraw into their peer groups, and this withdrawal is (within limits) accepted by adults. What Marsland is describing here is the *generation gap.*

ASK YOURSELF...

- While adolescents and their parents are, by definition, different generations, does this necessarily and inevitably mean that there's a generation gap – that is, that there'll be conflict between them because they occupy 'different worlds'?

Parent–adolescent relationships

According to Hendry (1999):

> Adolescence as a transition from childhood to adulthood requires changes from child–parent relationships to young-adult–parent relationships ...

Failure to negotiate new relationships with parents, or having highly critical or rejecting parents, is likely to make adolescents adopt a negative identity (Curry, 1998). Also, parents who rated their own adolescence as stormy and stressful reported more conflict in their relationships with adolescent children and were less satisfied with their family (Scheer & Unger, 1995). Parents of adolescents in general are often going through a time of transition themselves, reappraising their life goals, career and family ambitions, and assessing whether they've fulfilled their expectations as parents.

However, for most adolescents relationships with parents become more equal and reciprocal, and parental

authority comes to be seen as open to discussion and negotiation (e.g. Coleman & Hendry, 1990; Hendry *et al.*, 1993). The study by Hendry *et al.* (1993) also suggests that relationships with mothers and fathers don't necessarily change in the same ways and to the same extent.

KEY STUDY 37.3 Adolescent–parent relationships (Hendry *et al.*, 1993)

- In a longitudinal Scottish study, Hendry *et al.* found that parents were chosen in preference to friends when discussing progress and problems at school, and careers, but not necessarily more personal matters.
- Mothers were preferred over fathers as confidantes in all areas except careers and sex (boys) and problems with mothers (both sexes). Most girls and nearly half the boys chose to confide in their mothers over problems with friends, and nearly half the girls and a third of the boys conveyed doubts about their own abilities to her.
- These figures suggest a *disengagement* by fathers. Girls tend to be very uncomfortable discussing pubertal issues with their fathers, and learn almost nothing from them about puberty. The mother's role in enforcing family rules brings her into conflict with the children more readily, but she's still seen as being supportive and caring, not 'distanced' like the father.

Studies conducted in several countries have found that young people get along well with their parents (e.g. Hendry *et al.*, 1993; Kloep & Tarifa, 1993), adopt their views and values, and perceive family members as the most important 'significant others' in their lives (McGlone *et al.*, 1996). Furthermore, most adolescents who had conflicts with their parents already had poor relationships with them before puberty (Stattin & Klackenberg, 1992).



Generational harmony – not generation gap

Disagreements between young people and their parents are similar everywhere in Europe: Greece (Besevegis & Giannitas, 1996), Italy (Jackson *et al.*, 1996), Scotland (Hendry *et al.*, 1993), Germany (Fischer *et al.*, 1985), Albania and Sweden (Kloep & Tarifa, 1993). Teenagers have daily quarrels about how long or often they may stay out, how much they should help at home, tidiness of their bedrooms, volume of music, and school achievement.

According to Jackson *et al.* (1996) disagreements can arise because:

- parents expect greater independence of action from their teenagers
- parents don't wish to grant as much autonomy as the adolescent demands (with young women having more conflict than young men over independence)
- parents and adolescents have different personal tastes and preferences.

Despite this potential for conflict, evidence suggests that competence as an independent adult can best be achieved within the context of a secure family environment, where exploration of alternative ideas, identities and behaviour is allowed and actively encouraged (Barber & Buehler, 1996). So, while detachment and separation from the family are necessary and desirable, young people don't have to reject their parents in order to become adults in their own right (Ryan & Lynch, 1989; Hill, 1993: see Chapter 32).

Peer relationships

Adolescent *friendship groups* (established around mutual interests) are normally embedded within the wider network of *peer groups* (which set 'norms', provide comparisons and pressures to conform to 'expected' behaviours). Friendship groups reaffirm self-image, and enable the young person to experience a new form of intimacy and learn social skills (such as discussing and solving conflicts, sharing and self-assertion). They also offer the opportunity to expand knowledge, develop a new identity, and experiment away from the watchful eyes of adults and family (Coleman & Hendry, 1990).

Generally, peers become more important as providers of advice, support, feedback and companionship, as models for behaviour and as sources of comparison with respect to personal qualities and skills. But while peer groups and friendship groups become important points of reference in social development and provide social contexts for shaping day-to-day values, they often *support* traditional parental attitudes and beliefs. Hence, peer and friendship groups can work in concert with, rather than in opposition to, adult goals and achievements (Hendry, 1999).

Coleman's focal theory: managing one change at a time

According to Coleman & Hendry (1990), most theories of adolescence help us to understand young people with serious problems and those belonging to minority or deviant groups. However, what's needed is a theory of *normality*. The picture that emerges from the research as a whole is that while adolescence is a difficult time for some, for the majority it appears to be a period of relative stability. Coleman's (1980) *focal theory* is an attempt to explain how this is achieved.

The theory is based on a study of 800 6-, 11-, 13-, 15- and 17-year-old boys and girls. Attitudes towards self-image, being alone, heterosexual and parental relationships, friendships and large-group situations, all changed as a function of age. More importantly, concerns about different issues reached a peak at different ages for both sexes.

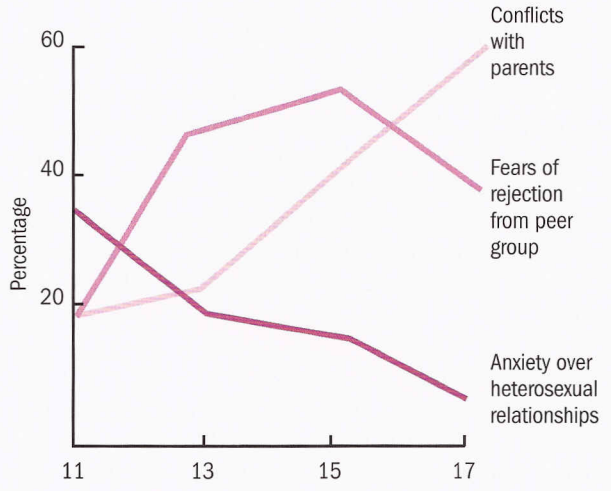


Figure 37.2 Peak ages of the expression of different themes. These data are for boys only (from Coleman & Hendry, 1990)

Particular sorts of relationship pattern come into *focus* (are most prominent) at different ages, although no pattern is specific to one age. The patterns overlap and there are wide individual differences.

Coleman believes that adolescents are able to cope with the potentially stressful changes as well as they do by dealing with one issue at a time. They spread the process of adaptation over a span of years, attempting to resolve one issue first before addressing the next. Because different problems and relationships come into focus and are dealt with at different points during the adolescent years, the stresses resulting from the need to adapt don't all have to be dealt with together.

According to Coleman & Hendry (1990), it's those adolescents who, for whatever reason, must deal with *more than one issue* (or normative shift) at a time, who are most likely to experience difficulties. If normative shifts coincide with non-normative ones, the situation is even more problematic (Hendry & Kloep, 1999).

Coleman's original findings have been successfully replicated by Kroger (1985) with large North American and New Zealand samples. Others have successfully tested hypotheses derived from the theory. For example, Simmons & Blyth (1987) predicted that, if change (such as puberty)

- occurred at too young an age (causing the individual to be developmentally 'off-time')
- was marked by sharp discontinuity (i.e. sudden change) or
- involved accumulation of significant and temporally close issues (important shifts occurred together)

then adjustment would be more difficult. Their results strongly supported their predictions.

CONCLUSIONS

Adolescence involves a number of important transitions from childhood to adulthood, including puberty. The potential for storm and stress in western societies is increased by the lack of clear definitions regarding when adulthood is reached. This makes the task of attaining an adult identity, as well as relationships with parents, more difficult compared with non-industrialised societies.

However, adolescence in western societies isn't as problem-ridden as the popular stereotype would have it. If any serious problems do arise, they're directly linked to *rapid social change* (Dasen, 1999), with the associated extension of adolescence and youth. Young people aren't given a productive role to play when entering adult society (Segall *et al.*, 1999).

While most of the major theories of adolescence paint a picture of adolescence as an *inherently* difficult developmental stage, the evidence suggests that this isn't necessarily so. Certain groups may be more vulnerable than others (such as early maturing girls), but the majority seem to cope well. According to Coleman's theory, it *isn't* adolescence itself that's stressful, but the timing and combination of the transitions faced by young people.

CHAPTER SUMMARY

- Adolescence involves **multiple transitions**. Compared with previous generations, it begins sooner and ends later. Various 'adulthood-postponing' changes have coincided with increased freedom at earlier ages.
- These transitions or **shifts** can be categorised as **normative maturational**, **normative society-dependent** and **non-normative**. Normative shifts can become non-normative, as when puberty begins unusually early or late.

- **Puberty** involves the **adolescent growth spurt** and the development of **secondary sex characteristics** (both sexes). While girls typically enter puberty two years before boys, there are important individual differences within each sex (such as **intraindividual asynchronies**).
- Adolescents evaluate their changing body images in terms of cultural standards of beauty, especially as these relate to weight. According to the **cultural ideal hypothesis** (CIH), girls move further away from their physical ideal and **early maturing girls** will face a double disadvantage. **Early maturing boys** will move fastest towards their physical ideal.
- Hall's **recapitulation theory** saw adolescence as a time of **storm and stress**. While mood swings are more common during adolescence, rates of **mental disorder** (and **delinquency rates**) are higher only in early maturing girls and adolescents with problems prior to puberty. The evidence for **off-time** maturation in boys is more mixed.
- According to Erikson, adolescence involves a conflict between **ego identity** and **role confusion**. In western societies, adolescence is a **moratorium**, intended to help ease the transition to adulthood. However, the lack of clear definitions of adulthood may contribute to the adolescent **identity crisis**.
- Role confusion can take the form of **negative identity**, related to which is **risk-taking behaviour**. These problems are largely absent in societies which mark the transition to adulthood by **initiation ceremonies**.
- While **self-esteem** may decline in early adolescence, especially in girls, this affects only a very small proportion of all adolescents. But research findings from English-speaking countries may not generalise to other cultures.
- Marcia's four **identity statuses** are defined by high/low **commitment** and **crisis**. Although these aren't meant to be Erikson-type stages, the evidence suggests otherwise, but only for men.
- **Sociological approaches** stress **role change**, the **conflicting** values and demands of different socialising agencies, and **auto-socialisation**, which produces the **generation gap**.
- Renegotiating relationships with parents is necessary, and while there are inevitable disagreements, adult status is probably best achieved within the context of a **secure family environment**.
- **Friendship groups** (as 'sub-groups' of the wider **peer group**) assume much greater significance during adolescence, such as helping to shape basic values. But these values are often **consistent** with parents' values, goals and achievements.
- According to Coleman's **focal theory**, most adolescents cope as well as they do by spreading the process of adaptation over several years, dealing with one issue at a time. Having to deal with more than **one issue at a time** is stressful, especially if changes occur too early or suddenly.

Links with other topics/chapters

- The importance of puberty for changes in the adolescent's body image is mirrored by the fact that the *bodily self* is probably the first aspect of the *self-concept* to develop in the baby (Chapter 33).
- Research conducted in Scotland in 1996/1997 found that young people who have sex before the age of 15 often regret it. Young people need more help to feel in control of their sexual activities, such as being helped to develop relationship and negotiation skills (Chapter 12).
- Erikson's psychosocial theory is *psychodynamic,* but differs from Freud's *psychoanalytic theory* in fundamental ways (Chapter 2 and 42).
- One of the major differences between Erikson and Freud concerns the crucial times for development. For Freud, the first five years are critical, while Erikson adopts a *life-span developmental approach* (Chapters 38 and 39).
- Teenage use of *hard, recreational* (class A) drugs is part of the wider problem of *substance use and dependence* (Chapter 8).
- Marcia's admission that his theory only loosely applies to females (but much better to males) illustrates *androcentrism* – that is, taking the male experience as the standard and applying it to both men and women. Erikson's theory has been criticised for similar reasons (Gilligan, 1982: Chapters 38 and 47).
- Adolescence coincides with parents experiencing their own transition, sometimes referred to as the *mid-life crisis* (Chapter 38).

Erikson's theory: achieving intimacy and generativity

Evaluation of Erikson's theory

Levinson *et al.*'s 'seasons of a man's life'

The era of early adulthood

The era of middle adulthood

Is there a 'mid-life crisis'?

The seasons of a woman's life

The validity of stage theories of adult development

Gould's theory of the evolution of adult consciousness

Marriage

Cohabitation

The benefits of marriage

Divorce

The stresses and benefits of divorce

Parenthood

Womanhood and motherhood

The changing role of women in the workforce

Women's attitudes to paid employment

Does 'New Man' exist?

Step-parenthood

Lesbian and gay parenting

Conclusions

Chapter summary

Links with other topics/chapters

38

ADULTHOOD



INTRODUCTION AND OVERVIEW

Assuming that we enjoy a normal lifespan, the longest phase of the life cycle will be spent in adulthood. Until recently, however, personality changes in adulthood attracted little psychological research interest. Indeed, as Levinson *et al.* (1978) have observed, adulthood is:

> ... one of the best-kept secrets in our society and probably in human history generally.

This chapter attempts to reveal some of these secrets by examining what theory and research have told us about personality change in adulthood, including the occurrence of crises and transitions.

Many theorists believe that adult concerns and involvements are patterned in such a way that we can speak about *stages* of adult development. However, evidence concerning the predictability of changes in adult life (or what Levinson, 1986, calls *psychobiosocial transitions*) is conflicting. Three kinds of influence can affect the way we develop in adulthood (Hetherington & Baltes, 1988):

1. *normative age-graded influences* are biological (such as the menopause) and social changes (such as marriage and parenting) that normally occur at fairly predictable ages
2. *normative history-graded influences* are historical events that affect whole generations or *cohorts* at about the same time (examples include wars, recessions and epidemics)
3. *non-normative influences* are idiosyncratic transitions, such as divorce, unemployment, and illness.

Levinson's (1986) term *marker events* refers to age-graded and non-normative influences. Others prefer the term *critical life events* to describe such influences, although it's probably more accurate to describe them as *processes*. Some critical life events, such as divorce, unemployment, and bereavement, can occur at any time during adulthood (bereavement is discussed in Chapter 39). Others occur late in adulthood, such as retirement (also discussed in Chapter 39). Yet others tend to happen early in adulthood, such as marriage (or partnering) and parenting.

ASK YOURSELF...
- What do you understand by the term adulthood?
- What does it mean to be an adult?

ERIKSON'S THEORY: ACHIEVING INTIMACY AND GENERATIVITY

As we saw in Chapter 37, Erikson believes that human development occurs through a sequence of *psychosocial stages*. As far as early and middle adulthood are concerned, Erikson described two primary developmental crises (the sixth and seventh of his psychosocial stages: see Table 38.1, page 650).

The first involves the establishment of *intimacy,* which is a criterion of having attained the psychosocial state of adulthood. By intimacy, Erikson means the ability to form close, meaningful relationships with others without 'the fear of losing oneself in the process' (Elkind, 1970). Erikson believed that a prerequisite for intimacy was the attainment of *identity* (the reconciliation of all our various roles into one enduring and stable personality: see Chapter 37, pages 640-644). Identity is necessary because we cannot know what it means to love someone and seek to share our life with them until we know who we are, and what we want to do with our lives. Thus, genuine intimacy requires us to give up some of our sense of separateness, and we must each have a firm identity to do this.

Intimacy needn't involve sexuality. Since intimacy refers to the essential ability to relate our deepest hopes and fears to another person, and in turn to accept another's need for intimacy, it describes the relationship between friends just as much as that between sexual partners (Dacey, 1982). By sharing ourselves with others, our personal identity becomes fully realised and consolidated. Erikson believed that if a sense of intimacy isn't established with friends or a partner, then *isolation* (a sense of being alone without anyone to share with or care for) would result. We normally achieve intimacy in young adulthood (our twenties and thirties), after which we enter middle age (our forties and fifties). This involves the attainment of *generativity,* the positive outcome of the second developmental crisis.

Box 38.1 Generativity

- The central task of the middle years of adulthood is to determine life's purpose or goal, and to focus on achieving aims and contributing to the wellbeing of others (particularly children).
- *Generativity* means being concerned with others beyond the immediate family, such as future generations and the nature of the society and world in which those future generations will live. As well as being displayed by parents, generativity is shown by anyone actively concerned with the welfare of young people and in making the world a better place for them to live and work.
- People who successfully resolve this developmental crisis establish clear guidelines for their lives, and are generally productive and happy within this directive framework. Failure to attain generativity leads to *stagnation,* in which people become preoccupied with their personal needs and comforts. They indulge themselves as if they were their own (or another's) only child.

Evaluation of Erikson's theory

- The sequence from identity to intimacy may not accurately reflect present-day realities. In recent years, the trend has been for adults to live together before marrying, so they tend to marry later in life than people did in the past (see below, pages 656-657). Many people struggle with identity issues (such as career choice) at the same time as dealing with intimacy issues.
- Additionally, some evidence suggests that females achieve intimacy *before* 'occupational identity'. The typical life course of women involves passing directly into a stage of intimacy without having achieved personal identity. Sangiuliano (1978) argues that most women submerge their identities into those of their partners, and only in mid-life do they emerge from this and search for separate identities and full independence. There's also a possible interaction between gender and *social class.* For example, working-class men

Table 38.1 Comparison between Erikson's and Freud's stages of development (based on Thomas, 1985; Erikson, 1950)

No. of stage	Name of stage (psychosocial crisis)	Psychosocial modalities (dominant modes of being and acting)	Radius of significant relationships	Human virtues (qualities of strength)	Freud's psychosexual stages	Approx. ages
1	Basic trust vs basic mistrust	To get. To give in return	Mother or mother-figure	Hope	Oral	0–1
2	Autonomy vs shame and doubt	To hold on. To let go	Parents	Willpower	Anal	1–3
3	Initiative vs guilt	To make (going after). To 'make like' (playing)	Basic family	Purpose	Phallic	3–6
4	Industry vs inferiority	To make things (completing). To make things together	Neighbourhood and school	Competence	Latency	6–12
5	Identity vs role confusion	To be oneself (or not to be). To share being oneself	Peer groups and outgroups. Models of leadership	Fidelity	Genital	12–18
6	Intimacy vs isolation	To lose and find oneself in another	Partners in friendship, sex, competition, co-operation	Love		20s
7	Generativity vs stagnation	To make be. To take care of	Divided labour and shared household	Care		Late 20s–50s
8	Ego integrity vs despair	To be, through having been. To face not being	'Humankind', 'my kind'	Wisdom		50s and beyond

see early marriage as a 'good' life pattern: early adulthood is a time for 'settling down', having a family and maintaining a steady job. By contrast, middle-class men and women see early adulthood as a time for exploration, in which different occupations are tried. Marriage tends to occur after this, and 'settling down' doesn't usually take place before 30 (Neugarten, 1975). There's also evidence of an interaction between gender, race and culture (see Cross-Cultural Study 38.1, below).

◎ Another example of how Erikson's stages may not apply to everyone is the case of 'baby fathers', the name given to young black men who have children with a number of women and wear this as a 'badge of honour' (Alibhai-Brown, 2000).

CROSS-CULTURAL STUDY 38.1

Intimacy and identity (Ochse & Plug, 1986)

- Ochse and Plug studied over 1800 South African black and white men and women. Their findings raise questions about both the timing of particular stages and the exact sequence of the developmental tasks involved.
- For example, amongst whites, 25–39-year-old women appeared to develop a sense of identity *before* men. This may be because developing a true sense of intimacy must *precede* a sense of identity (not vice versa, as Erikson claimed). According to Price & Crapo (1999):

  It is quite feasible that by sharing and risking themselves in close relationships, people may learn to know themselves, to reconcile their conception of themselves with the community recognition of them, and to develop a sense of mutuality with their community.

  Not until this process is complete can a sense of identity be achieved.
- Due to prevailing social conditions in South Africa (including minority status, high poverty rates and fragmented living conditions), black women had a difficult time achieving a sense of intimacy and hence of identity. Black men also didn't achieve a sense of identity until late in life. In turn, this adversely affected black women, who still experienced a lack of self-definition, intimacy and wellbeing far into middle age:

It appears that the experience of the 'adult years' was one thing for whites and something quite different for blacks. As social conditions change in South Africa, whole groups of blacks may expect to experience a completely different psychological development than they would have under apartheid ... (Price & Crapo, 1999)

- Erikson's psychosocial stages were meant to be *universal,* applying to both genders in all cultures. However, he acknowledged that the sequence of stages is different for a woman, who suspends her identity as she prepares to attract the man who will marry her. Men achieve identity before achieving intimacy with sexual partners, whereas for women, Erikson's developmental crises appear to be fused. As Gilligan (1982) has observed:

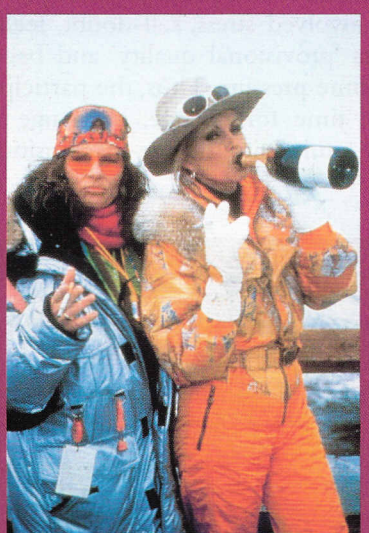
The female comes to know herself as she is known, through relationships with others.

- All the above evidence suggests that it's almost certainly impossible to describe universal stages for adults. Moreover, as we saw in Chapter 37, there's evidence of a growing prolongation of adolescence.

Box 38.2 Perpetual adolescence

- According to Sheehy (1996), while childhood is ending earlier, adults are prolonging adolescence into their thirties. Indeed, many people aren't acknowledging maturity until they reach 40. Sheehy suggests that:

  Adolescence is now prolonged for the middle classes until the end of their twenties, and for blue-collar men and women until their mid-twenties, as more young adults live at home longer. True adulthood does not begin until 30. Most Baby Boomers, born after World War II, do not feel fully 'grown up' until they are in their forties, and even then they resist ...



- Beaumont (1996) argues that we've evolved into a generation of 'Peter Pans', stuck in adolescence:

  You see them in Hyde Park – thirty- and forty-somethings on rollerblades and skateboards, hanging out at Glastonbury or discussing the merits of Oasis versus Blur at dinner parties.

- The fictional models of this 'new generation' are Gary and Tony from the BBC TV programme *Men Behaving Badly,* and Patsy and Eddy from *Absolutely Fabulous.* Real-life examples of 'Peter Pans' include Cliff Richard, Richard Branson and Mick Jagger.

- According to Orbach (in Beaumont, 1996), one problem created by adults who refuse to grow up is their own parenting. Unable to look up to figures of authority themselves, they feel a sense of loss and look to their own children for emotional sustenance in a curious role reversal (see Chapter 32).

LEVINSON *ET AL.*'S 'SEASONS OF A MAN'S LIFE'

Perhaps the most systematic study of personality and life changes in adulthood began in 1969, when Levinson *et al.* interviewed 40 men aged 35 to 45. Transcripts were made of the five to ten tape-recorded interviews that each participant gave over several months. Levinson *et al.* looked at how adulthood is actually *experienced.*

In *The Seasons of a Man's Life,* Levinson *et al.* (1978) advanced a *life-structure theory,* defining life structure as the

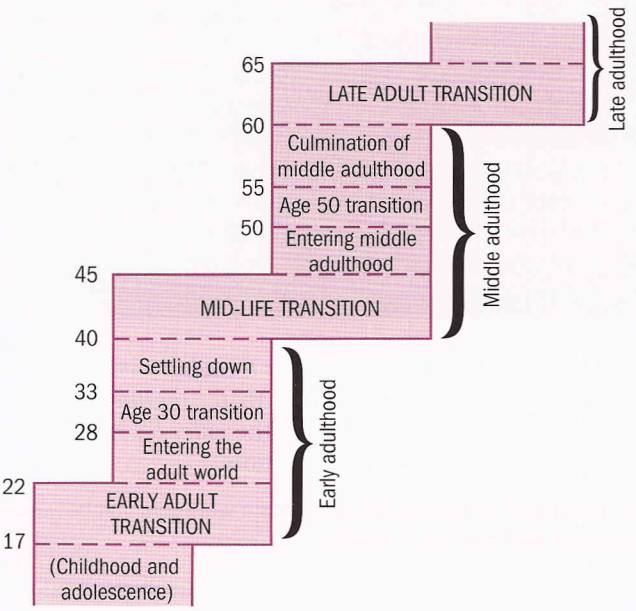


Figure 38.1 Levinson *et al.*'s theory of adult development. The life cycle is divided into four major eras that overlap in the form of cross-era transitions (from Levinson *et al.*, 1978, *The Seasons of a Man's Life*. New York: A.A. Knopf, a division of Random House, Inc. Reprinted by permission of SLL/Sterling Lord Literistic, Inc. © 1975 by Daniel J. Levinson)

underlying pattern or design of a person's life at any given time. Life structure allows us to 'see how the self is in the world and how the world is in the self', and evolves through a series of *phases* or *periods* which give overall shape to the course of adult development. Adult development comprises a sequence of *eras* which overlap in the form of *cross-era transitions.* These last about five years, ending the outgoing era and initiating the incoming one. The four eras are pre-adulthood (age 0–22), early adulthood (17–45), middle adulthood (40–65), and late adulthood (60 onwards).

The phases or periods alternate between those that are stable (or *structure-building*) and transitional (or *structure-changing*). Although each phase involves biological, psychological and social adjustments, family and work roles are seen as central to the life structure at any time, and individual development is interwoven with changes in these roles.

The era of early adulthood

Early adult transition (17–22) is a developmental 'bridge' between adolescence and adulthood.

Box 38.3 Separation and attachment

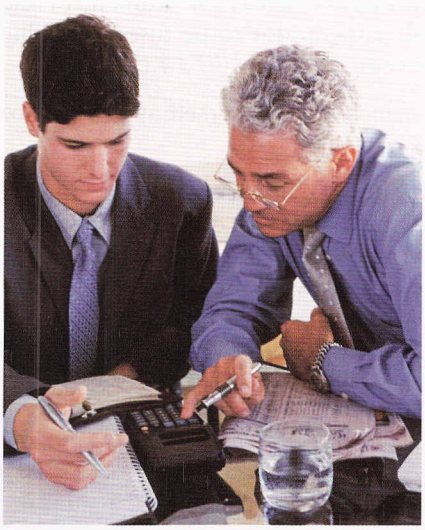
- Two key themes of the early adult transition are *separation* and the formation of *attachments* to the adult world.
- *External separation* involves moving out of the family home, increasing financial independence, and entering more independent and responsible roles and living arrangements.
- *Internal separation* involves greater psychological distance from the family, less emotional dependence on the parents, and greater differentiation between the self and family. Although we separate from our parents, Levinson *et al.* argue that we never complete the process, which continues throughout life.
- *Attachment* involves exploring the world's possibilities, imagining ourselves as part of it, and identifying and establishing changes for living in the world before we become 'full members' of it.

Between ages 22 and 28, we *enter the adult world.* This is the first *structure-building* (rather than *structure-changing*) phase, and hence is referred to as the *entry life structure for early adulthood.* In it, we try to fashion:

> ... a provisional structure that provides a workable link between the valued self and adult society.

In the *novice phase,* we try to define ourselves as adults and live with the initial choices we make concerning jobs, relationships, lifestyles and values. However, we need to create a balance between 'keeping our options open' (which allows us to explore possibilities without being committed to a given course) and 'putting down roots' (or creating stable life structures).

Our decisions are made in the context of our *dreams:* the 'vague sense' we have of ourselves in the adult world and what we want to do with our lives. We must overcome disappointments and setbacks, and learn to accept and profit from successes, so that the dream's 'thread' doesn't get lost in the course of 'moving up the ladder' and revising the life structure. To help us in our efforts at self-definition, we look to *mentors,* older and more experienced others, for guidance and direction. Mentors can take a formal role in guiding, teaching, and helping novices to define their dreams. Alternatively, a mentor's role may be informal, providing an advisory and emotionally supportive function (as a parent does).



Mentoring

The age-30 transition (28–33) provides an opportunity to work on the flaws and limitations of the first life structure, and to create the basis for a more satisfactory structure that will complete the era of young adulthood. Most of Levinson *et al.*'s participants experienced *age-30 crises* which involved stress, self-doubt, feelings that life was losing its 'provisional quality' and becoming more serious, and time pressure. Thus, the participants saw this as being the time for change, if change was needed. However, for a minority the age-30 transition was crisis-free.

Box 38.4 Settling down

- The *settling down* (or *culminating life structure for early adulthood:* 33–40) *phase* represents consolidation of the second life structure. This involves a shift away from tentative choices regarding family and career towards a strong sense of commitment to a personal, familial, and occupational future.
- Paths for success in work and husband and father roles are mapped out and, instead of just beginning to find out

what's important and what our opinions are, we see ourselves as responsible adults.
- The settling down phase comprises two sub-stages: *early settling down* (33–36) and *becoming one's own man* (BOOM) (36–40). In the latter, men strive to advance and succeed in building better lives, improve and use their skills, be creative, and in general contribute to society.
- A man wants recognition and affirmation from society, but he also wants to be self-sufficient and free of social pressure and control. Although a 'boy–man' conflict may be produced, this can represent a step forward. This substage may also see him assume a mentor role for someone younger (see above).

The era of middle adulthood

ASK YOURSELF...
- What do you think is meant by the 'mid-life crisis'?
- Do you think it's a real phenomenon?

The *mid-life transition* (40–45) involves terminating one life structure, initiating another, and continuing the process of *individuation* started during the BOOM substage. This is a time of soul-searching, questioning, and assessing the real meaning of the life structure's achievement. It's sometimes referred to as the *mid-life crisis,* although Levinson *et al.* didn't actually use this term. For some people, the change is gradual and fairly painless. But for others, it's full of uncertainties.

The crisis stems from unconscious tensions between attachment and separation, the resurfacing of the need to be creative (which is often repressed in order to achieve a career), and retrospective comparisons between dreams and life's reality.

Most participants in Levinson *et al.*'s study hadn't reached age 45. Following interviews two years after the main study was concluded, some were chosen for more extensive study. But the evidence for the remaining phases is much less detailed than for the earlier ones.

In *entering middle adulthood* (or *early life structure for middle adulthood:* 45–50), we've resolved (more or less satisfactorily) whether what we've committed ourselves to really is worthwhile. It's again necessary to make choices regarding a new life structure. Sometimes, these choices are defined by *marker events* such as divorce, illness, occupational change or the death of a loved one. However, the choices may also be influenced by less obvious but significant changes, such as shifts in the enthusiasm for work or in the quality of marriage. As before, the resulting life structure varies in how satisfying it is and how connected it is to the self. It may not be intrinsically happy and fulfilling. The restructuring consists of many steps, and there may be setbacks in which options have to be abandoned ('back to the drawing board').

Is there a 'mid-life crisis'?

Just as the 'identity crisis' is part of the popular stereotype of adolescence (see Chapter 37), Levinson *et al.* have helped to make the 'mid-life crisis' part of the common-sense understanding of adult development. Like Erikson, Levinson *et al.* see crisis as *inevitable.* As they note:

> It is not possible to get through middle adulthood without having at least a moderate crisis in either the mid-life transition or the age-50 transition.

They also see crisis as *necessary.* If we don't engage in soul searching, we'll:

> ... pay the price in a later developmental crisis or in a progressive withering of the self and a life structure minimally connected to the self.

The view that crisis is both inevitable and necessary (or *normative,* to use Erikson's term) is controversial. People of all ages suffer occasional depression, self-doubt, sexual uncertainty, and concerns about the future. Indeed, there appear to be an increasingly wide age range and a growing number of people who decide to make radical changes in their life-style, both earlier and later than predicted by Levinson *et al.*'s theory.

'Downshifting'

According to Tredre (1996), the concept of a mid-life crisis is too narrow in that traditionally, or stereotypically, it refers to someone in his/her late forties, with grown-up children, who gives up a secure and well-paid 'respectable' career, and moves to a small market town or village in order to enjoy a less stressful, more peaceful and generally better quality of life. We need to spread the net wider nowadays, and think in terms of early-, mid- and late-life crises: people of all age groups and walks of life are 'feeling the itch'.

Downshifting refers to voluntarily opting out of a pressurised career and interminably long hours in the office, and often involves giving up an exceptionally well-paid job in a high-profile industry in the pursuit of a more fulfilling way of life. Tredre identifies a number of possible reasons for downshifting, including anti-urbanism (fuelled by concerns over urban pollution), crime, violence and increasing job insecurity.

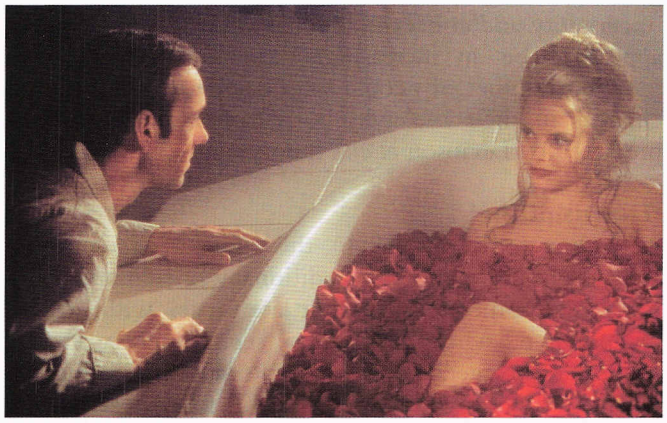
Box 38.5 Identity crisis and the life cycle

- Marcia (1998) also believes that the concept of a mid-life crisis is misleading and too narrow. He argues that 'adolescing' (making decisions about one's identity) occurs *throughout* the lifespan, whenever we review or reorganise our lives. At the very least, we might expect identity crises to accompany (in Erikson's terms) intimacy–isolation, generativity–stagnation, and integrity–despair (see Chapter 39).

- Just as puberty and other changes in early adolescence disrupt the partial identities of childhood, so the demands of intimacy require a reformulation of the initial identity achieved at late adolescence. Similarly, the generative, care-giving requirements of middle age differ from those of being with an intimate partner. The virtues of fidelity, love and care (see Table 38.1), which derive from positive resolution of young and middle adulthood, don't emerge without a struggle. According to Marcia (1998):

  Periods of adolescing are normal, expectable components of life cycle growth.

- However, while crises aren't limited to specific times in our lives, those associated with middle (and old) age are especially difficult.



Kevin Spacey as a man experiencing a mid-life crisis in *American Beauty*. This becomes focused (literally) on his daughter's friend, played by Mena Suvari

ASK YOURSELF...
- Who's 'more right', Levinson *et al.* or Marcia?
- Who would you *prefer* to be right?

Durkin (1995) notes that a large proportion of middle-aged people actually feel *more* positive about this phase of life than earlier ones, with only 10 per cent reporting feeling as though they'd experienced a crisis. For Durkin, the mid-life crisis isn't as universal as Levinson *et al.* suggest, and the time and extent to which we experience uncomfortable self-assessments vary as a function of several factors (such as personality). Although the evidence is sparse, it appears that going through middle age in a relatively peaceful and untroubled way is actually a *favourable* indicator of future development, that is, a lack of emotional disturbance predicts *better* rather than poorer functioning in later life (Rutter & Rutter, 1992).

Two other components of the mid-life crisis are much less controversial.

1. A wide range of adaptations in the life pattern. Some of these stem from role changes that produce fairly drastic consequences, such as divorce, remarriage, a major occupational change, redundancy, or serious illness. Others are more subtle, and include the ageing and likely death of parents, the new role of grandparent, and the sense of loss which sometimes occurs when children have all moved away from the family home (*empty-nest distress*).
2. Significant change in the *internal* aspects of life structures, which occurs regardless of external events. This involves reappraising achievements and remaining ambitions, especially those to do with work and relationships with our sexual partners. A fundamental development at this time is the realisation that the final authority for life rests with us. (This is similar to Gould's, 1978, 1980, theory: see below.)

CRITICAL DISCUSSION 38.1 : Is there a male menopause?

A recent World Health Organization conference on the ageing male concluded that there's definitely a male biological andropause, and that men also suffer from osteoporosis (as do women). There's also an increased risk of heart attack from declining testosterone levels.

The critical measure, though, is 'bio-available' testosterone. As testosterone declines, sex hormone binding globulin (SHBG) increases. SHBG traps much of the testosterone that's still circulating and prevents it from affecting the body's tissues. What's left over ('bioavailable') does the beneficial work, but this is what radically declines from about the age of 45. Hence, the case for testosterone (male hormone) replacement therapy.

But even more critical may be a second hormone, DHEA (a steroid produced by the adrenals), levels of which decline dramatically in the early thirties. DHEA elevates mood, cognition, immune response, promotes lean body mass, increases sexual drive, reduces fatigue, and prevents hardening of the arteries. Above all, it appears to improve brain function and repair memory loss.
(Based on Hodson, 2000)

The seasons of a woman's life

Levinson *et al.*'s research was carried out on an all-male sample. In *The Seasons of a Woman's Life* (1997), Levinson and Levinson presented their findings for 45 women (aged 35 to 45), comprising 15 homemakers (full-time housewives/mothers), 15 businesswomen and 15 academics. The broad pattern of developmental periods based on the original male sample was confirmed. But men and women have been shown to differ in terms of their *dreams*.

Box 38.6 Women's dreams and 'gender splitting'

- Levinson (1986) argues that a *'gender-splitting'* phenomenon occurs in adult development. Men have fairly unified visions of their futures, which tend to be focused on their careers. But women have 'dreams' which are more likely to be split between a career and marriage.
- This was certainly true of academics and business-women, although the former were less ambitious and more likely to forego a career, whereas the latter wanted to maintain their careers but at a reduced level. Only the homemakers had unified dreams (to be full-time wives and mothers, as their own mothers had been).
- The family plays a 'supportive' role for men. Women's dreams were constructed around their relationships with their husbands and families, which subordinated their personal needs. So, part of *her* dream is *his* success. For Durkin (1995), this difference in women's and men's priorities may put women at greater risk:

  ... of disappointment and developmental tension as their investment in others' goals conflict with their personal needs.

- Women who give marriage and motherhood top priority in their twenties tend to develop more individualistic goals for their thirties. However, those who are career-oriented early on in adulthood tend to focus on marriage and family concerns later.
- Generally, the transitory instability of the early thirties lasts longer for women than for men, and 'settling down' is much less clear-cut. Trying to integrate career and marriage/family responsibilities is very difficult for most women, who experience greater conflicts than their husbands are likely to.

Gender-splitting is relevant to discussion of marriage/partnering and parenthood. The changing roles of women in paid employment and of men in the home are discussed later in the chapter (see pages 660–663).

THE VALIDITY OF STAGE THEORIES OF ADULT DEVELOPMENT

ASK YOURSELF...

- Do you think it's appropriate to describe adulthood in terms of distinct stages?

- Erikson's and Levinson *et al.*'s theories of adult development emphasise a 'ladder-like' progression through an inevitable and universal series of stages/phases. But this view of adult development as 'stage-like' has been criticised on the grounds that it underestimates the degree of *individual variability* (Rutter & Rutter, 1992). Many members of the mainstream working-class population don't grow or change in systematic ways. Instead, they show many rapid fluctuations, depending on things like relationships, work demands and other life stresses that are taking place (Craig, 1992).
- Stage theories also imply a *discontinuity* of development. But many psychologists believe there's also considerable *continuity* of personality during adult life.
- Current views of adult development stress the transitions and milestones that mark adult life, rather than a rigid developmental sequence (Baltes, 1983, Schlossberg, 1984). This is commonly referred to as the *life-events approach*. Yet, despite the growing unpredictability of changes in adult life, most people still unconsciously evaluate their transitions according to a *social clock*, which determines whether they're 'on time' with respect to particular life events (such as getting married: Schlossberg *et al.*, 1978). If they're 'off time', either early or late, they're *age-deviant*. Like other types of deviancy, this can result in social penalties, such as amusement, pity or rejection.
- While all cultures have social clocks that define the 'right' time to marry, begin work, have children, and so on, these clocks vary greatly *between* cultures (Wade & Tavris, 1999). Craig (1992) sees changes in adult thought, behaviour and personality as being less a result of chronological age or specific biological changes, and more a result of personal, social and cultural events or forces. Because of the sheer diversity of experiences in an adult's life, Craig doesn't believe it's possible to describe major 'milestones' that will apply to nearly everyone.

CRITICAL DISCUSSION 38.2 What is an adult: re-setting the social clock

- Just as social clocks are 'set' at different times in different cultures for different life changes, in western societies the clock becomes 're-set' over time.
- For example, 40 to 50 years ago, a stable job and income could be achieved (by men) by age 21, and so this was seen as the time to 'settle down'. If a woman wasn't married by the time she was 25, she was 'on the shelf', and if still single by 29, she was an 'old maid'.
- Common beliefs about the appropriate age for child-bearing put pressure on women to become mothers by their early twenties, and pregnancy after 26 was seen as 'late' (Apter, 2001). These patterns are drastically different now.
- As both cause and effect of these changes, our whole understanding of what it means to be adult is changing. In *The Myth of Maturity* (2001), Apter argues that it's taking young people far longer to achieve adult status than it used to. She refers to 18–24-year-olds as 'thresholders', because they're only *on the brink* of achieving self-sufficiency and autonomy (commonly cited adult qualities). They're like 'apprentices to adulthood'.
- A total of 58 per cent of 22–24-year-olds and 30 per cent of 24–30-year-olds (still) live with their parents. Leaving

home isn't a single event, but a prolonged *process:* 40 per cent of female and 50 per cent of male thresholders who leave home will subsequently return.

- There are a thousand different routes from adolescence to adulthood, each involving uncertainty and risk (Apter, 2001).

ASK YOURSELF...

- Would you describe yourself as a thresholder?
- Are many of your peers thresholders?

GOULD'S THEORY OF THE EVOLUTION OF ADULT-CONSCIOUSNESS

Whereas Levinson *et al.* discussed adult development in terms of evolving life structures, Gould (1978, 1980) prefers to talk about the *evolution of adult consciousness* which occurs when:

... we release ourselves from the constraints and ties of childhood consciousness.

Gould sees the thrust of adult development as being towards the realisation and acceptance of ourselves as creators of our own lives, and away from the assumption that the rules and standards of childhood determine our destinies. We have to free ourselves of the *illusion of absolute safety,* an illusion which dominated childhood. This involves transformations, giving up the security of the past to form our own ideas. We have to replace the concept of parental dependency with a sense of autonomy, or owning ourselves. But this is difficult, because dependency on parents is a normal feature of childhood. Indeed, without it, childhood would be very difficult. As well as shedding childhood consciousness, Gould believes that our *sense of time* also changes.

Box 38.7 Our changing sense of time

- Up until age 18 or so, we feel both protected and constrained by our parents, and never quite believe that we'll escape the 'family world'. This is like being in a timeless capsule in which 'the future is a fantasy space that may possibly not exist'. But we begin to glimpse an endless future and see an infinite amount of time ahead of us.
- In our twenties, we become confident about being separated from the family. However, we haven't yet formed early adult life structures. Gould (1980) puts it like this:

  Because of all the new decisions and novel experiences that come with setting up new adult enterprises, our time sense, when we're being successful, is one of movement along a chosen path that leads linearly to some obscure prize decades in the future. There is plenty of time, but we're still in a hurry once we've developed a clearer, often stereotyped, picture of where we want to be by then.

- At the end of our twenties, our sense of time incorporates our adult past as well as future. The future is neither infinite nor linear, and we must choose between different options because there isn't time to take them all.
- From our mid-thirties to mid-forties, we develop a sense of urgency and that time is running out. We also become aware of our own mortality which, once attained, is never far from our consciousness. How we spend our time becomes a matter of great importance. Additionally, we begin to question whether our 'prize' (freedom from restrictions by those who have formed us – our parents) either exists or, if it does, whether it's been worth it (cf. Levinson *et al.*'s 'dream').

MARRIAGE

ASK YOURSELF...

- Identify some arguments for and against marriage, as compared with 'living together' (cohabitation).

Since over 90 per cent of adults in western countries marry at least once, marriage is an example of a *normative age-graded influence* (see *Introduction and overview*). Marriage is an important transition for young adults, because it involves a lasting personal commitment to another person (and, so is a means of achieving Erikson's *intimacy*), financial responsibilities and, perhaps, family responsibilities.

Marriage and preparation for marriage can be very stressful. Davies (1956) identified mental disorders occurring for the first time in those who were engaged to be married. Typically, these were anxiety and depression, which usually began in connection with an event that hinged on the wedding date (such as booking the reception). Since the disorders improved when the engagement was broken off or the wedding took place, Davies concluded that it was the *decision* to make the commitment that was important, rather than the act of getting married itself.

Cohabitation

Couples who live together (or *cohabit*) before marriage are *more* likely to divorce later, and be less satisfied with their marriages, than those who marry without having cohabited. Also, about 40 per cent of couples who cohabit don't marry. While this suggests that cohabitation may prevent some divorces, cohabitees who do marry are more likely to divorce.

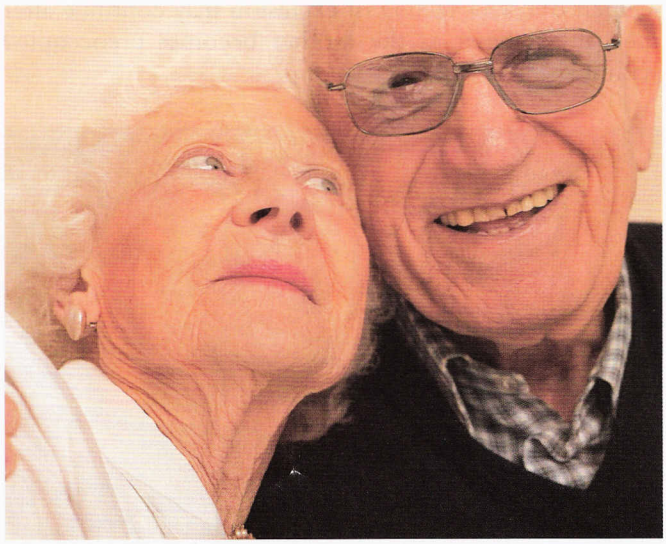
ASK YOURSELF...

- Why do you think cohabitees who marry are more likely to divorce?

According to Bee (1994), this is because people who choose to cohabit are different from those who choose not to. As a group, cohabitees seem to be more willing to flout tradition in many ways (such as being less religious and disagreeing that one should stay with a marriage partner no matter what). Those who don't cohabit include a large proportion of 'more traditional' people.

The benefits of marriage

It's long been recognised that mortality is affected by marital status. Married people tend to live longer than unmarried people, are happier, healthier and have lower rates of various mental disorders than the single, widowed or divorced. The greater mortality of the unmarried relative to the married has generally been increasing over the past two to three decades, and it seems that divorced (and widowed) people in their 20s and 30s have particularly high risks of dying compared with other people of the same age (Cramer, 1995).



Being happily married protects against mental and physical illness

ASK YOURSELF...

- Why – or how – might marriage produce these beneficial effects? Look back at your answers to the previous 'Ask Yourself' box. Did any of the arguments for marriage include its psychological/emotional benefits?
- Are there any reasons for believing that either men or women derive greater benefits?

CRITICAL DISCUSSION 38.3 Do men get more from marriage than women?

- Bee (1994) argues that the greatest beneficiaries of marriage are men, partly because they're less likely than women to have close confidants outside marriage, and partly because wives provide more emotional warmth and support for husbands than husbands do for wives.
- Marriage is less obviously psychologically protective for women, not because a confiding and harmonious relationship is any less important for them (indeed, if anything it's more important), but because:
  (a) many marriages don't provide such relationships, and
  (b) other consequences of marriage differ between the sexes.
  (The 'advantage' of marriage for men is reflected in the higher rates of men's re-marriage following divorce: see text below.)
- Although our attitudes towards education and women's careers have changed, Rutter & Rutter (1992), echoing Levinson's concept of 'gender-splitting' (see Box 38.6), have proposed that:

  The potential benefits of a harmonious relationship may, for a woman, be counterbalanced by the stresses involved in giving up a job or in being handicapped in a career progression or promotion through having to combine a career and parenthood.

This is discussed further on pages 659–663.

DIVORCE

Although divorce rates in the USA have shown a modest decline since 1979, over 45 per cent of marriages still end in divorce (Simons, 1996). The average marriage in the USA lasts seven years; nine in the UK (Bedell, 2002). Divorce rates are highest during the first five years of marriage, and then peak again after couples have been married for 15–25 years (Turnbull, 1995).

In 1996, there were about 1,150,000 divorces in the USA, involving over one million children, 84 per cent of whom live with their mothers in single-parent homes. But this is usually only temporary, since 65 per cent of women and over 75 per cent of men remarry, and 40 per cent of all marriages are second-time-arounders (Groskop, 2004). Rates of cohabitation are high in those who don't remarry. Divorce rates are even higher in remarriages than first marriages. Only 65 per cent of children in the UK live with *both* natural parents, and one in ten have a step-parent (1,284,000 children: Groskop, 2004).

So, in recent decades, the structure and stability of families in western societies have undergone considerable changes. An increasing number of adults live in subsequent cohabiting or remarried relationships and, in turn, these changes have led to a marked rise in the number of

children living in step-family situations (Nicholson *et al.*, 1999: see page 663).

National statistics conceal important racial and ethnic differences. For example, compared with non-Hispanic Whites, African-Americans wait longer before marrying and are less likely to marry, but are also more likely to separate and divorce and to remain separated without a legal divorce. They're also less likely to remarry (Hetherington & Stanley-Hagan, 1999).

The stresses and benefits of divorce

Divorce is a *stressor* for both men and women (see Chapter 12), since it involves the loss of one's major attachment figure and source of emotional support. But men appear to experience more stress than women, which is perhaps not altogether surprising given the greater benefits to men of marriage (see above).

According to Woollett and Fuller (in Cooper, 1996), mothers who've been through a divorce often report experiencing a sense of achievement in their day-to-day activities and a feeling of 'a job well done'. This is because they use their experiences of divorce in a positive way to 'galvanise' them into taking charge of their lives. According to Woollett:

> When the marriage breaks down, the mother is thrown into all sorts of things that are unfamiliar. There are new areas, new decisions, and she is forced to cope ...

However, Lewis (in Cooper, 1996) warns that:

> We must be careful about thinking about the positive changes [divorced women report] because we are always comparing a positive change against the negative feeling that went before. The positive is only relative.

PARENTHOOD

For most people, parenthood and child-rearing represent key transitions. According to Bee (1994), 90 per cent of adults will become parents, mostly in their twenties and thirties. But parenthood varies in meaning and impact more than any other life transition. It may occur at any time from adolescence to middle age, and for some men, may even occur in late adulthood! Parenthood may also be planned or unplanned, wanted or unwanted, and there are many motives for having children.

Traditionally, parenthood is the domain of the married couple. However, it may involve a single woman, a homosexual couple (see page 664), a cohabiting couple or couples who adopt or foster children. Increasingly, in recent decades there's been a marked rise in the number of teenage pregnancies (see Chapter 37), and even more recently, the phenomenon of 'minimal parenting' (as in donor insemination: see Chapter 32).

Equally, though, the increasing importance of work careers for women has also led to more and more couples postponing starting a family, so that the woman can become better established in her career (see Critical Discussion 38.4). For example, women's average age at the birth of their first child was almost 30 in 2003 (compared with 23 in the 1960s: Groskop, 2004). Consequently, there's a new class of middle-aged parents with young children (Turnbull, 1995).

ASK YOURSELF...

- Assuming that they're planned, why do people have children? What are their motives ?
- Is it 'natural' (at least for women) to want children?

Parenthood brings with it many psychological adaptations. For example, many women worry that their baby may be abnormal, about the changes in their body, and how well they'll cope with motherhood. Another concern is how the relationship with their husband or partner will be affected. While pregnancy brings many couples closer together, most men take longer than women to become emotionally involved in it – and some feel left out. This feeling of exclusion may continue after the baby is born, as the mother becomes preoccupied with it.



Being at the birth of his child can help counteract a father's feelings of being excluded during the pregnancy – and afterwards. It can also help him to form an emotional bond with the baby

Marital satisfaction tends to be highest before children arrive. It then drops and remains relatively low as long as there are dependent children in the home. Finally, it rises again during the 'post-parental' and retirement stages. For new parents, the roles of parent and spouse are at least partially incompatible. New parents report having less time for each other, whether it be conversing, having sex, being affectionate, or carrying out routine chores that used to be done together (Bee, 1994).

Parents are, of course, attachment figures for their dependent children. Unlike the relationship with a partner, the relationship with a child is *asymmetrical* (the child isn't an attachment figure for its parents: see Chapter 32). This new form of responsibility can be very stressful, and has implications for how parents adapt to these new role demands, and the quality of their interactions with the child (Durkin, 1995). An unhappy couple may stay together not just 'for the kids' sake', but because the parental role has sufficient meaning and value for each partner to outweigh the dissatisfaction with their marriage (Levinson *et al.*, 1978).

Box 38.8 Empty nest or crowded nest: which is more distressing?

- Regarding *empty-nest distress*, most parents *don't* find their children's departure from home to be a distressing time (Durkin, 1995). Indeed, many report that the end of child-rearing responsibilities is a 'liberating experience', and they welcome new opportunities for closer relationships with their partners, personal fulfilment through work, a return to education, and so on. The extent to which women report empty-nest distress may be *cohort-related*, that is, it may be more typical of women who reached maturity during historical periods when traditional roles were stressed (Durkin, 1995).
- The *crowded nest* (Datan *et al.*, 1987) can, however, be a source of stress. This occurs when grown-up children opt not to leave home, which defies the demands of the 'social clock' established by preceding generations. As we saw in Critical Discussion 38.2, middle-aged parents are increasingly sharing their homes with their thresh-older children (see Figure 38.2).

Womanhood and motherhood

According to Kremer (1998), in the post-industrial/post-modern world of the twenty-first century we're still influenced by beliefs and attitudes regarding work and the sexes (or 'gendered employment profiles') inherited from an earlier time. For example, the *motherhood mystique/mandate* refers to the belief that women are born and reared to be, first and foremost, mothers (while the 'fatherhood mandate' is hardly, if ever, mentioned: see Chapter 32). Another example is the stereotype of men as inherently more committed to work than women, whose attitudes towards it are less positive than men's.

The motherhood mandate has at least three important implications.

1. Motherhood is 'natural'. Berryman (in Lacey, 1998) maintains that motherhood is still seen as synonymous with womanhood:

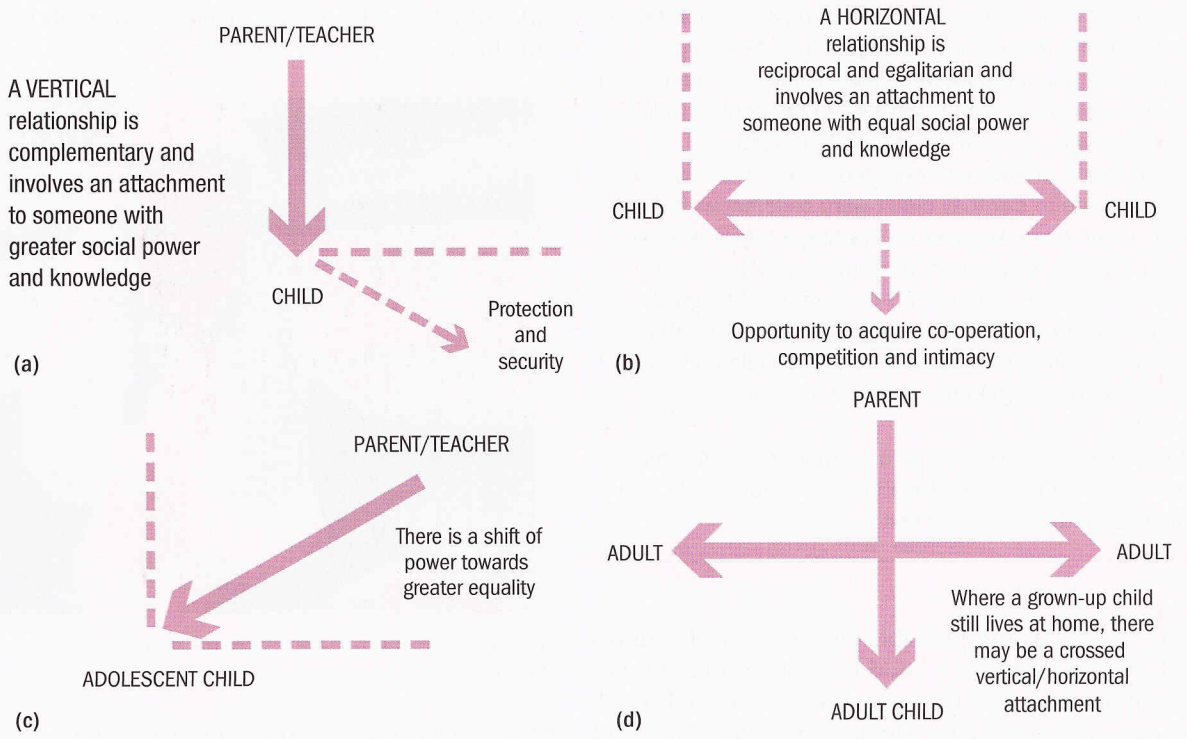


Figure 38.2 Different kinds of relationships based on Hartup's (1989) distinction between vertical and horizontal relationships. While (a) and (b) are clear-cut in terms of this distinction, (c) involves a change from vertical to horizontal, while (d) involves both dimensions simultaneously. Both (c) and (d) may involve conflict – but for different reasons

Parenthood is seen as a central, key role in women's lives in a way that it isn't for men. Women who don't become mothers are seen as psychologically inadequate – wanting in some way. But there is plenty of evidence that motherhood doesn't come naturally to all women; it is a skill that many women have to learn.

For example, Berryman maintains that, because smaller families and fewer siblings are now the norm, many women today have little experience of children when they start their own families – and the reality can come as a shock. This belief that mothering comes 'naturally' is so deep-rooted that women who don't bond immediately with their babies feel inadequate or guilty, or perhaps both. However, there are indications that attitudes towards having children are changing.

CRITICAL DISCUSSION 38.4 Do people still want to become parents?

- According to Jones (1995), 20 per cent of women in the UK born between 1960 and 1990 are unlikely ever to become mothers. They're likely to be well-educated, middle-class women, not necessarily pursuing a career, but realising that 'it's OK to go through life without having children' (Root Cartwright, in charge of the British Organisation of Non-Parents (BON)).
- Norton (1999) cites a market research survey conducted by Mintel (the *Pre-Family Lifestyles Report*, 1999), involving almost 700 20–34-year-olds without children. It found that more women than men thought it important to be financially secure and established in their careers before starting a family. More significantly, 25 per cent of women, compared with less than 20 per cent of men, saw their work as a career rather than a job.
- Married men and women were more likely than cohabiting couples to say they didn't want children, with those living alone being keenest on starting a family (85 per cent). Overall, 10 per cent of women said they were undecided about children; 25 per cent of the sample didn't want to assume the responsibility of parenthood, and only 3 per cent thought that having children early in adulthood outweighed the financial and career advantages.
- However, there's evidence of a growing trend for professional women to give up their careers in favour of full-time motherhood (see text below).

2. Most people would probably consider it to be 'unnatural' (or 'wicked') for a mother to leave her children, even if they're left in the care of their father, whom she believes will look after them better than she could herself. However, the number of absent mothers targeted by the Child Support Agency trebled between 1995 and 1998, with over 37,000 being approached to pay child maintenance. One in 20 absent parents is a woman (Lacey, 1998). Either there are a lot more 'unnatural' or 'wicked' women out there than was previously thought, or the motherhood mandate needs serious revision
3. It's 'unnatural' or simply 'wrong' for a mother of young children to go out to work. Related to this is the stereotype concerning women's attitudes towards paid employment. Is there any foundation for this stereotype?

The changing role of women in the workforce

Traditionally, men have been seen as dominating the primary employment sector, with their employment histories remaining unbroken from school to retirement. In contrast, women predominate in the secondary employment sector, which is typically unstable, offering poor career prospects and working conditions. There's also a dip or gap in paid employment associated with child-rearing during the mid-twenties to early thirties (Kremer, 1998).

However, at the end of the 1990s employment profiles for both genders were changing rapidly. Women comprised about half the workforce (although a far higher proportion were part-time than men), and mothers were less likely to leave work to care for young children. Yet women were still more likely than men to interrupt their careers, at least temporarily, to take care of children, while men rarely did (Craig, 1992; Nicholson, 1993). (This relates to the 'gender-splitting' phenomenon identified by Levinson (1986) and will be discussed further below.)



Cherie Blair: mother and barrister first, Prime Minister's wife second

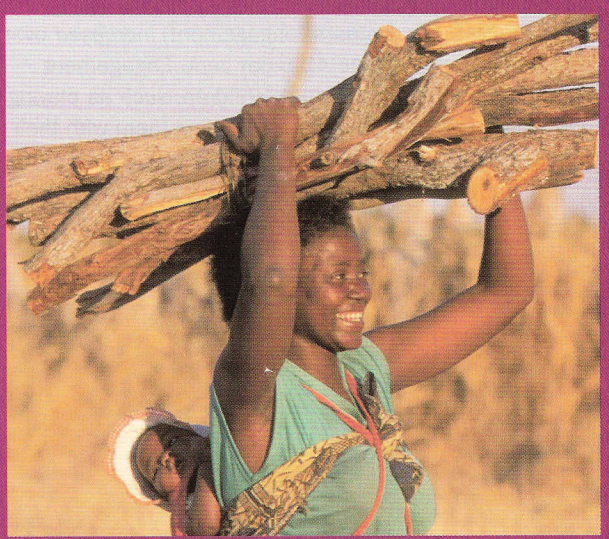
Women's attitudes to paid employment

Kremer (1998) cites several surveys (conducted in the 1980s and 1990s) showing that, despite poorer working conditions, the overwhelming majority of working women prefer to be in paid employment. Additionally,

most of those not in work (especially those under 50) would prefer to be. When asked to rate the importance of various factors at work, the differences between men and women are few, and usually only involve clashes between work commitments and domestic responsibilities. Men and women also tend to agree about the motivation for working, such as money, stimulation, and feeling useful. Ironically (given their poorer working conditions), women consistently express higher job satisfaction (especially part-time workers and those working from home).

Box 38.9 Women, work and evolution

- According to Hrdy (1999), these findings should come as no surprise. Arguing from an *evolutionary perspective*, Hrdy claims that being ambitious is just as natural for a mother as breastfeeding. It's a fallacy to believe that mothers who go out to work are in conflict with their natural instincts. She argues that there's nothing new about working mothers: for most of human existence, and for millions of years before that, primate mothers have combined productive lives with reproduction. This combination of work and motherhood has always entailed trade-offs.



- What's new for modern mothers is the *compartmentalisation* of their productive and reproductive lives. The factories, laboratories and offices where women in post-industrial societies go to 'forage' are even less compatible with child care than jaguar-infested forests and distant groves of mongongo nuts.
- Hrdy is especially interested in the Pleistocene period, which extends from about 1.6 million years ago (when humans emerged from apes) to the invention of agriculture (about 10,000 years ago). It was during this period that many human instincts – including mothering – evolved through natural selection. Pleistocene woman would have striven for status and 'local clout' among her female peers. Ambition was just as much the driving force for women as for men, serving the Darwinian purpose of producing offspring who survived to adulthood.

However, a survey in the UK (conducted by *Top Santé* magazine and BUPA) paints a rather different picture (Brown, 1999). Involving 5,000 women, average age 36, the majority in managerial and professional jobs, the survey found that 77 per cent would give up work tomorrow if they could. At an age when most would have expected to be at the pinnacle of their professions, nearly half were dreaming of a life of leisure and almost a third wanted to be homemakers. 'Superwoman' may exist, but it seems she feels overworked and disillusioned from juggling the demands of career and family. Contrary to the equation of womanhood with motherhood, many feel under pressure to go out to work and raise families, as they feel that society doesn't value mothers who stay at home (Brown, 1999).

This trend was confirmed in a more recent *Top Santé* survey involving 2000 women (average age 38), which showed that two-thirds want to quit work because they're failing to manage successfully the competing demands of work and home (in Flett, 2004). Similarly, a recent report ('Choosing to be Different') from the Centre for Policy Studies states that there's a general rejection of the 1980s and 1990s work ethic. Women want to fit their work round their home life (and not vice-versa) (O'Kelly, 2004)

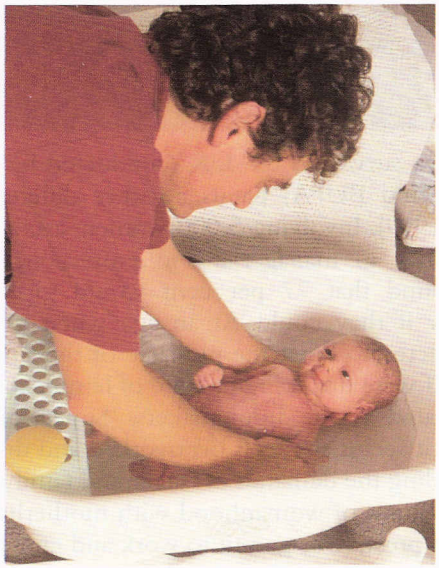
ASK YOURSELF...

- If women are having to juggle career and family, what does this tell us about the contribution of their husbands or partners?
- Does 'New Man' exist?

Does 'New Man' exist?

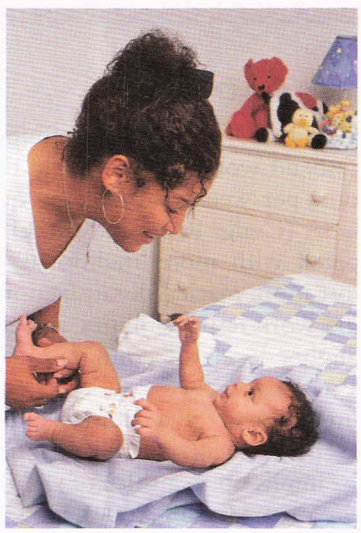
The phenomenon of 'dual-earner couples/marriages' (where the husband works full-time and the wife works at least 20 hours per week) has become quite common, both in the USA (Craig, 1992) and the UK (Nicholson, 1993). Compared with more 'traditional' couples, these husbands report more marital dissatisfaction and conflicts over family and work responsibilities, and the wives similarly report higher levels of conflict, as well as a very realistic work overload.

There's some evidence that domestic tasks (especially child care) are more evenly shared in some dual-earner families (for example, up to a third of all home child care is now done by men: Hinsliff, 2004). However, it's nearly always the woman who's still primarily responsible for both housework and child care, regardless of the age of the children and whether she works full- or part-time. Based on studies in eastern and western Europe, and



Fathers' involvement in childcare, though on the increase, is still not seen as 'men's work', but is more of a bonus – for child and father alike. Nor does it seem to reduce any of the mother's burden of responsibility

North and South America, it seems that when there are no children, working wives do the bulk of the shopping, and so on. But when there are children, the husband's contribution to running the home actually *declines* (in relative terms) with each child: the wife's increases by 5–10 per cent with each child (Nicholson, 1993). While there are no apparent social class differences in men's contributions to the domestic division of labour, there are cultural ones, with Swedish men doing much more than their North American counterparts (Durkin, 1995).



While childcare is still regarded as predominantly 'woman's work', mothers are increasingly likely to have a 'second career' outside the home. Whether her paid employment is full- or part-time, this is likely to be additional to her domestic duties

A survey in the UK (Montgomery, 1993) found that 82 per cent of husbands had never ironed, 73 per cent had never washed clothes, and 24 per cent had never cooked. Kremer (1998) concludes that:

> There is little evidence to suggest that domestic responsibilities have been lifted from the shoulders of women. Instead, women's dual roles (home carer and worker) persist. Indeed, even in situations where both partners are not in paid employment, or where the woman is the primary wage earner, then this pattern often still endures.

Similarly, Quiery (1998) maintains that while there have been some changes in fathers' behaviour over the last 15–20 years, they're not dramatic and the burden of child-rearing and home-making still falls on mothers. However, evidence from America suggests that a rather more significant change is taking place.

KEY STUDY 38.1 Are American men participating more in their children's activities? (Pleck, 1999)

- Pleck compared 11 studies dating from the mid-1960s to the early 1980s with 13 studies conducted between the mid-1980s and early 1990s. As shown in Figure 38.3, fathers' *engagement* with their children (as a percentage of the mothers' engagement) *increased* over that period from 34.3 to 43.5 per cent. Engagement refers to interaction with one's children, such as playing with them, reading to them, and helping them with their homework.

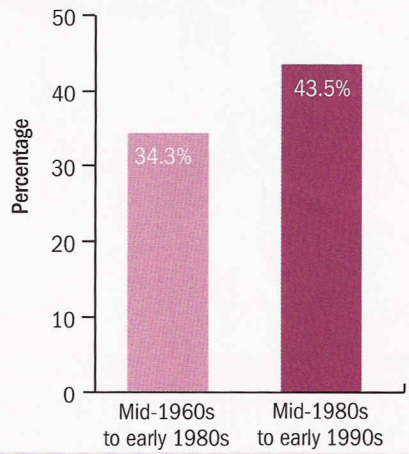


Figure 38.3 Amount of time fathers interact with their children as percentage of mothers' engagement (from Pleck, 1999)

- In that same period, fathers' *availability* also increased (again, as a percentage of the mothers') from 51.8 to 65.6 per cent (see Figure 38.4). Availability is a measure of how much time fathers spend near their children, either interacting with them or not (such as working on the computer while the children play video games).

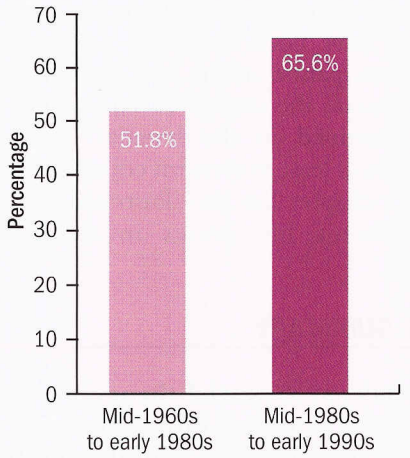


Figure 38.4 Amount of time fathers are near their children, either interacting or not, as percentage of mothers' availability (from Pleck, 1999)

Pleck (1999) concludes that although men still perform less child care than women, men's participation in family activities is increasing. However, most of the relevant data come from studies of *married* fathers, which excludes a substantial proportion of the adult male population. When these other groups are taken into account, the *opposite* picture emerges. For example, the increase in divorce rates since the 1950s has weakened many men's family ties. Most divorced fathers' contact with their children drops off rapidly after divorce. Almost half of all divorced fathers haven't seen their children in the past year, and high proportions of them don't pay child maintenance. In addition, the recent increase in the proportion of men who never marry also indicates decreasing family involvement. Most unmarried fathers – teen and adult – refuse to accept any responsibility for their children.

Thus, it seems that American family life (and probably in the UK and other western countries also) is changing in two *contradictory directions:*

1. in *two-parent families,* fathers' involvement with children and overall gender equality are increasing. In the UK, 44 per cent of new fathers took some kind of paternity leave in 2002 (compared with 9 per cent in 1999). Recent legislation should help to trigger an even bigger future rise (O'Kelly, 2004)
2. however, two-parent families have become a smaller proportion of all families, and *families headed by single mothers* have become more common. The overall effect of this is that more children don't have resident fathers (Pleck, 1999).

Pleck also challenges the popular view among social scientists (including psychologists, such as Levinson) that family is more central than work for women's identity, while the reverse is true for men. He cites evidence (from both his own and others' research) showing that family is far more central psychologically to men than work, just as it is for women. For example, fathers and mothers experience similar levels of anxiety over separation from their children during the first two years of parenthood. This suggests that 'gender-splitting' may not be such a clearly defined phenomenon as Levinson proposed. However, men are more likely to take workplace emotions home with them than are mothers, who keep these separate from their family experience.

Step-parenthood

In the early 1960s, almost 90 per cent of children spent their childhood and adolescence in homes with two biological, married parents. Now that's true of about 40 per cent of children in the USA and about 50 per cent in the UK (Hetherington & Stanley-Hagan, 1999). This is attributed to increases in divorce, out-of-wedlock childbearing, and dramatically escalating rates of cohabitation.

Although 38 per cent of white American children experience parental divorce before their 16th birthdays, the figure for African-American children is almost 74 per cent. Thus, compared with white children, more African-American children experience their parents' marital dissolutions and spend longer in single-parent households, which often include cohabiting partners and relatives.

KEY STUDY 38.2 The effects of living in a step-family (Nicholson *et al.*, 1999)

- Nicholson *et al.* examined the effects of living in a step-family during childhood and adolescence on a range of psychosocial outcomes. Data were collected for over 900 children in New Zealand as part of the Christchurch Health and Development Study. The children had all lived in step-families (for the first time) from ages 6–16, and were assessed at age 18 in terms of mental health, anti-social behaviour, substance use, restricted life opportunities, and sexual risk-taking.
- Compared with a control group (children who hadn't been exposed to step-families for the first time between 6 and 16), they were more likely to become juvenile offenders, nicotine-dependent, to abuse or become dependent on illegal substances, leave school without qualifications, engage in early sexual activity and have multiple sexual partners.
- However, when factors such as family socio-economic status, family history of instability, adversity and conflict, gender and pre-existing child-behaviour and attentional problems were controlled for, the differences became non-significant:

> Although young people exposed to living in a step-family had increased risks of poor psychosocial outcomes, much of this association appeared to be spurious and arose from confounding social, contextual and individual factors that were present prior to the formation of the step-family ... (Nicholson *et al.*, 1999)

Lesbian and gay parenting

In the context of advocating that psychologists should study homosexual relationships in their own terms (and not by comparison with heterosexual ones), Kitzinger & Coyle (1995) suggest that we might want to ask how the children of lesbian/gay couples understand and talk about their parents' relationships, and how they can develop positive views about homosexuality in a heterosexual culture. Homosexual couples have always been involved in parenting through partners' previous heterosexual relationships. The recent increase in fostering/adoption of children by gay men, and the ongoing 'lesbian baby boom', mean that many more homosexual couples are parents than used to be the case.

According to Kitzinger *et al.* (1998), research into lesbian/gay parenting was initially concerned with whether or how far the children of lesbians and (to a lesser extent) gay men could be distinguished psychologically from those of heterosexuals. On balance, this research suggested that these children were no more 'at risk' than children raised in heterosexual families.

For example, Taylor (1993) found no evidence that children reared in gay/lesbian families were more disturbed or had greater gender identity confusion than those reared in heterosexual families. Barrett & Robinson (1994) reviewed the impact of gay fathering on children. They stress the need to take into account that these children are likely to have experienced parental divorce and to show the psychological distress that often accompanies it (see Chapter 32). Although these children may be isolated, angry and in need of help sorting out their feelings about homosexuality in general, they're in little danger of being sexually abused, and adjust well to their family situations. While the relationships with their fathers may be stormy at first, they also have the potential for considerable honesty and openness.

Increasingly, psychologists are researching areas directly rooted in the concerns of lesbian/gay parents themselves, including coming out to one's children, and managing different co-parenting arrangements (such as a lesbian mother with her female lover, her ex-husband, a gay male sperm donor, or a gay male co-parent: Kitzinger *et al.*, 1998).

CONCLUSIONS

Although some of the most influential and popular explanations of personality change in early and middle adulthood have adopted *stage approaches,* critics argue that adult development doesn't occur in predictable and ordered ways. An alternative, yet *complementary,* approach is to assess the impact of *critical life events.* These include two major *normative age-graded* influences, marriage/partnering and parenthood, and one *non-normative* influence, divorce.

In the case of parenthood, the changing roles of men and women have been shown to be crucial, especially women's participation in the labour market. This means that to appreciate the impact of various life events, they must be examined in the broader context of social norms, which, at least in western countries, are constantly shifting. The chapter has also illustrated the *mutual influence* of different life events involving family and relationships.

CHAPTER SUMMARY

- In Erikson's **psychosocial theory**, the task of **young adulthood** is to achieve **intimacy** and to avoid **isolation**. The central task of **middle adulthood** is the attainment of **generativity** and avoidance of **stagnation**.
- Many people struggle with issues of identity and intimacy **at the same time**, and women tend to achieve intimacy **before** 'occupational identity', submerging their identity into that of their partners. There are also important social class, racial, and cultural differences in the timing of marriage and 'settling down'.
- Levinson *et al.* were concerned with how adulthood is actually **experienced**. Their **life-structure theory** identifies **phases/periods** that are either stable (**structure-building**) or transitional (**structure-changing**). A sequence of **eras** overlaps in the form of **cross-era transitions**.
- **Early adult transition** is a developmental bridge between adolescence and adulthood, and **entry life structure for early adulthood** is the first **structure-building** phase.
- Levinson *et al.* see **crisis** as both inevitable and necessary (**normative**). But people of all ages suffer crises ('**adolescing**'), and a growing number of people are deciding to make radical changes in their life-styles (**downshifting**), both earlier and later than 'mid-life'.
- While men have fairly unified, career-focused visions of the future, women's **dreams** are split between career and marriage/family responsibilities (**gender-splitting**).
- The **age-30 transition** generally lasts longer for women than for men, and '**settling down**' is much less clear-cut. Trying to integrate career and marriage and family responsibilities is very difficult for most women.
- The view that adult development is '**stage-like**' has been criticised on the grounds that it underestimates **individual variability**. Stage theories also imply a **discontinuity** of development.
- According to Gould, the thrust of adult development is towards **adult consciousness** and freeing ourselves of the **illusion of absolute safety**. Adult development also involves a change in the **sense of time**.

- **Marriage** and **parenting** are **normative, age-graded influences**, while **divorce** is a **non-normative influence**. These are also called **marker events** or **critical life events**.
- Couples who **cohabit** before marriage are more likely to divorce later, or be less satisfied with their marriages, than those who don't cohabit.
- **Married people** tend to live longer, and are happier, healthier and have lower rates of mental disorder than unmarried people. Men benefit most from marriage, and the potential benefits of marriage for women may be counterbalanced by gender-splitting.
- **Parenthood** has greater variability in meaning and impact than any other life transition. While pregnancy can bring couples closer together, men can feel excluded, especially after their babies are born.
- There's little evidence for **empty-nest distress**, and marital satisfaction usually increases once children have left home. The **crowded nest** is more likely to be distressing.
- The **motherhood mystique/mandate** can make women who don't bond immediately with their babies feel inadequate. But women are increasingly **postponing** having children or deciding not to have children at all.
- The motherhood mandate also implies that it's unnatural for mothers to leave their children, and that it's wrong for a mother of young children to go out to work.
- Despite evidence that domestic duties are more evenly shared in some **dual-earner families**, it's invariably the woman who's still primarily responsible for both housework and child care.
- Although **married fathers** are **engaging** more with their children, most **divorced** fathers have little contact with their children, and an increasing number of men remain unmarried and deny responsibility for their children. The overall effect is that more and more children are living without resident fathers.
- Many more **lesbian/gay couples** are parents than used to be the case. Early research examined whether the children of such parents were more 'at risk' than those raised in heterosexual families, but more recently the emphasis has shifted to issues such as co-parenting arrangements.

Links with other topics/chapters

- Normative age-graded influences and non-normative influences include many of the *life events* listed in Holmes and Rahe's *Social Readjustment Rating Scale* measure of *stress* (Chapter 12).
- According to Gilligan, Erikson's theory is *androcentric* (male-centred), but is still meant to apply equally to males and females (Chapter 47).
- Levinson *et al.*'s claim that separation from our parents is never complete is consistent with the evidence which shows that securely attached *adolescents* find it *easier* to achieve independence (Chapter 37). They use 'attachment' differently from *attachment theorists,* because they talk about attachment to 'the world', rather than to *attachment figures* (Chapter 32).
- The debate regarding the validity of seeing adult development in terms of distinct stages mirrors that in relation to children's *cognitive development* (Chapter 34).
- Gould's theory is really an extension of the Freudian idea of *separation anxiety* (Chapter 32).
- What's fast becoming *the norm* as far as the appropriate age to marry and have children would have been considered *deviant* in previous generations (and vice-versa). This illustrates the more general issue as to how *definitions of normality* can and do change over time (Chapter 43).
- Marriage cannot be the same type of transition for everyone. In some cultures, for example, people have little choice as to who their partners will be (as in *arranged marriages:* Chapter 28).
- Much of the research into *interpersonal relationships* has focused on marriage and other forms of long-term partnering, including the reasons for the *breakdown* of relationships (e.g. divorce) (Chapter 28).
- The psychological effects of divorce have been investigated mainly from the perspective of *the child*. If, as research strongly suggests, the most damaging factor is *marital conflict,* then relief from this may be beneficial for both children and parents (Chapter 32).
- The effects of being raised by gay or lesbian couples have been studied in relation to *gender identity* and *sexual orientation* (Chapter 36), and the influence of *early experience* on later development (Chapter 32).

The meaning of 'old'
Ageism
The effects of stereotyping
Cognitive changes in old age
Changes in intelligence
Explaining changes in intelligence
Changes in memory
Alzheimer's disease
Social changes in old age
Social disengagement theory (SDT)
An evaluation of social disengagement theory
Activity (or re-engagement) theory (AT)
An evaluation of activity theory
Social exchange theory (SET)
Socioemotional selectivity theory (SST)
An evaluation of SST
Psychosocial theory
The characteristics of ego-integrity
Retirement
Retirement and gender
Retirement and unemployment
Bereavement
Approaches to the understanding of grief
Stage or phase accounts of grief
Kübler-Ross' stage theory: anticipatory grief
An evaluation of stage theories of grief
Cultural influences on reactions to bereavement
Inter- and intra-cultural differences
Conclusions
Chapter summary
Links with other topics/chapters

39

OLD AGE



INTRODUCTION AND OVERVIEW

While 'growing up' is normally seen as desirable, 'growing old' usually has far more negative connotations. The negative view of ageing is based on the *decrement model*, which sees ageing as a process of decay or decline in physical and mental health, intellectual abilities and social relationships.

An alternative to the decrement model is the *personal growth model*, which stresses the potential advantages of late adulthood (or 'old age'), such as increased leisure time, reduced responsibilities, and the ability to concentrate only on matters of high priority (Kalish, 1982). This much more positive view is how ageing has been studied within the *lifespan approach*.

In this chapter we consider some of the theories and research concerned with *adjustment to late adulthood*. It begins by looking at what's meant by the term 'old', which turns out to be more complex than it might seem. *Stereotyped beliefs* about what elderly people are like are an inherent part of prejudiced attitudes towards them. Research into some of the cognitive and social changes that occur in late adulthood bring these stereotypes and prejudice into sharp focus. The chapter also discusses the impact of two major life events, *retirement* (a *normative, age-graded influence*, often taken to mark the 'official' start of old age) and *bereavement* (a *non-normative influence*, although death of one's spouse becomes increasingly likely as we attain late adulthood).

THE MEANING OF 'OLD'

ASK YOURSELF...
- How old is old?
- Is 'old' simply a matter of chronological age?

People today are living longer and retaining their health better than any previous generation (Baltes & Baltes, 1993). The proportion of older people in the British population has increased dramatically in recent years. In 1961, 2 per cent of the population (one million people) were aged 80 or over. By 1991, this figure had risen to 4 per cent (two million people). The number of centenarians has risen from 271 (in 1951), to 1185 (1971), to 4400 (1991). In 1997, the number stood at 8000 with projections of 12,000 (2001) and 30,000 (2030) (McCrystal, 1997). Figures for the USA show that the number of centenarians doubled between 1990 and 2000, and may increase more than eleven-fold by 2050 (Brown, 2000).



The oldest person who ever lived: Jeanne Calment died in 1997 at the age of 122

Because of this *demographic imperative* (Swensen, 1983), developmental psychologists have become increasingly interested in our later years. But what do we mean by 'old'? Kastenbaum's (1979) '*The ages of me*' questionnaire assesses how people see themselves at the present moment in relation to their ages (see Box 39.1).

ASK YOURSELF...
- How old are you according to Kastenbaum's questionnaire?

Box 39.1 Kastenbaum's 'The ages of me' questionnaire

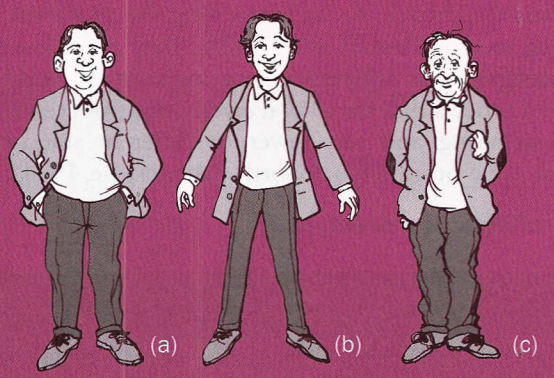


Figure 39.1 While (c) might depict someone's chronological age, (a) might correspond to his biological age and (b) might represent his subjective age

- My **chronological age** is my actual or official age, dated from my time of birth. My chronological age is ...
- My **biological age** refers to the state of my face and body. In other people's eyes, I look as though I am about ... years of age. In my own eyes, I look like someone of about ... years of age.
- My **subjective age** is indicated by how I feel. Deep down inside, I really feel like a person of about ... years of age.
- My **functional age**, which is closely related to my **social age**, refers to the kind of life I lead, what I am able to do, the status I believe I have, whether I work, have dependent children and live in my own home. My thoughts and interests are like those of a person of about ... years of age, and my position in society is like that of a person of about ... years of age.

(Adapted from Kastenbaum, 1979)

Few people, irrespective of their chronological age, describe themselves *consistently* (that is, they tend to give *different* responses to the different questionnaire items). For example, people over 20 (including those in their 70s and 80s) usually describe themselves as feeling younger than their chronological age. We also generally consider ourselves to be *too* old.

It seems, then, that knowing a person's chronological age tells us little about the sort of life that person leads or what s/he is like. However, one of the dangerous aspects of ageism is that chronological age is assumed to be an accurate indicator of all the other ages. According to Comfort (1977), ageism is:

> ... the notion that people cease to be people, cease to be the same people or become people of a distinct and inferior kind by virtue of having lived a specified number of years ... Like racism, which it resembles, it is based on fear.

Similarly, Bromley (1977) argues that most people react adversely to the elderly because they seem to deviate from our concept of 'normal' human beings. As part of the 'welfarist approach' to understanding the problems of an ageing society (Fennell *et al.*, 1988), 'they' (i.e. the elderly) are designated as different, occupying another world from 'us' – a process that for all perceived minorities tends to be dehumanising and sets lower or different standards of social value or individual worth (Manthorpe, 1994).

The effects of stereotyping

Box 39.2 Can stereotypes make you ill?

- In April 2000, the charity Age Concern highlighted the plight of Jill Baker, a cancer patient in her sixties. She was shocked to discover that, despite still being in a generally good state of health, a junior doctor she'd never met had put 'not for resuscitation' on her records.
- According to Ebrahim (in Payne, 2000): Medical students still rejoice in their stereotypes of '*geriatric crumbly*' and '*GOMER*' (get out of my emergency room) patients.
- Ebrahim cites US evidence showing that 'do not resuscitate' orders are commonly used for people with HIV, blacks, alcohol misusers, and non-English speakers, suggesting that doctors have stereotypes of who isn't worth saving.
- In the UK, one in 20 people aged over 65 had been refused treatment by the NHS, with one in ten over-fifties believing they were treated differently (i.e. worse) because of their age (based on an Age Concern survey).

Adler (2000) cites American research by Levy and her colleagues showing that stereotypes can affect how the elderly think about themselves in ways that can be detrimental to their mental and physical health. In one study, elderly participants spent a few minutes concentrating on a computer-based reaction-time test. Age-related words were subliminally presented on the screen (too quickly to be consciously registered), and were either negative (e.g. 'senile, 'forgetful', diseased'), or positive (e.g. 'wise', 'astute', 'accomplished').

The participants were subsequently asked if they'd request an expensive but potentially life-saving medical treatment, without which they'd die within a month. Most of those who'd 'seen' the positive words (evoking a positive stereotype) chose the life-saving treatment, but most of those who were exposed to negative words declined.

In another study, participants were challenged with a series of maths problems following ten minutes' exposure to positive or negative words. Those exposed to the latter showed signs of stress – heart rate, blood pressure, and skin conductance all increased and stayed high for over 30 minutes. In contrast, those exposed to positive words sailed through the challenge stress-free.

Since many studies have linked chronic stress to disease (see Chapter 12), Levy suspects that repeated triggering of negative stereotypes over a period of several years may be making elderly people ill (Adler, 2000). (Levy's research is discussed further in Key Study 39.1, page 671.)

ASK YOURSELF...

- If you're being honest, do you stereotype elderly people ('the elderly')?
- If so, what characteristics do you attribute to them?

Stereotypes of the elderly are more deeply entrenched than (mis)conceptions of gender differences. It's therefore not surprising that people are overwhelmingly unenthusiastic about becoming 'old' (Stuart-Hamilton, 1997). According to Jones (1993), everyone over retirement age is seen as forming a strange homogeneous mass, with limited abilities, few needs and few rights:

> What other section of the population that spans more than 30 years in biological time is grouped together in such an illogical manner? ... As a consequence, older people suffer a great deal ... As for experience and wisdom, these qualities are no longer valued in this fast-moving high-technology world. They are devalued by the community, as well as by their owners ... (Jones, 1993)

Box 39.3 A decade-by-decade description of 'the elderly'

The young old (60–69): This period marks a major transition. Most adults must adapt to new role structures in an effort to cope with the losses and gains of the decade. Income is reduced due to retirement. Friends and colleagues start to disappear. Although physical strength wanes somewhat, a great many young old have surplus energy and seek out new and different activities.

The middle-aged old (70–79): This is often marked by loss or illness. Friends and family may die. The middle-aged old must also cope with reduced participation in formal organisations, which can produce restlessness and irritability.

Their own health problems become more severe. The major developmental task is to maintain the personality reintegration achieved in the previous decade.

The old old (80–89): The old old show increased difficulty in adapting to and interacting with their surroundings. They need help in maintaining social and cultural contacts.

The very old old (90–99): Although health problems become more acute, the very old old can successfully alter their activities to make the most of what they have. The major advantage of old age is freedom from responsibilities. If previous crises have been resolved satisfactorily, this decade may be joyful, serene and fulfilling.

(Based on Burnside *et al.*, 1979, and Craig, 1992)

As Box 39.3 suggests, the aged aren't one cohesive group (Craig, 1992). Rather, they're a collection of subgroups, each with its unique problems and capabilities, but all sharing to some degree the age-related difficulties of reduced income, failing health, and the loss of loved ones. For Craig, however:

> Having a problem is not the same as being a problem, and the all-too-popular view of those over age 65 as needy, non-productive, and unhappy needs revision.

Similarly, Dietch (1995) has commented that:

> Life's final stage is surrounded by more myths, stereotypes and misinformation than any other developmental phase.

COGNITIVE CHANGES IN OLD AGE

Consistent with the *decrement model* (see *Introduction and overview*), it's commonly believed that old age is associated with a decrease in cognitive abilities. Until recently, it was thought that intellectual capacity peaked in the late teens or early twenties, levelled off, and then began to decline fairly steadily during middle age and more rapidly in old age.

The evidence on which this claim was based came from *cross-sectional studies* (studying different age groups at the same time).

ASK YOURSELF...

- Why can't we generalise from cross-sectional studies?

However, we cannot draw firm conclusions from such studies, because the age groups compared represent different generations with different experiences (the *cohort effect*). Unless we know how 60-year-olds, say, performed when they were 40 and 20, it's impossible to say whether or not intelligence declines with age.

An alternative methodology is the *longitudinal study*, in which the same people are tested and retested at various times during their lives. Several such studies have produced data contradicting the results of cross-sectional studies, indicating that at least some people retain their intellect well into middle age and beyond (Holahan & Sears, 1995). However, the evidence suggests that there are some age-related changes in different kinds of intelligence and aspects of memory.

Changes in intelligence

Although psychologists have always disagreed about the definition of intelligence, there's general acceptance that it's *multi-dimensional* (composed of several different abilities). An important – and very relevant – distinction is that between crystallised and fluid intelligence.

- *Crystallised intelligence* results from accumulated knowledge, including a knowledge of how to reason, language skills, and an understanding of technology. This type of intelligence is linked to education, experience and cultural background, and is measured by tests of general information.
- *Fluid intelligence* is the ability to solve novel and unusual problems (those not experienced before). It allows us to perceive and draw inferences about relationships among patterns of stimuli and to conceptualise abstract information, which aids problem-solving. Fluid intelligence is measured by tests using novel and unusual problems not based on specific knowledge or particular previous learning.

Crystallised intelligence *increases* with age, and people tend to continue improving their performance until near the end of their lives (Horn, 1982). Using the *cross-longitudinal method* (in which *different* age groups are *retested* over a long period of time), Schaie & Hertzog (1983) reported that fluid intelligence *declines* for all age groups over time, peaking between 20 and 30.

Explaining changes in intelligence

ASK YOURSELF...

- Try to account for these findings. (It may help to think both of what happens to people as they get older, as well as the nature of intelligence tests themselves – see Chapter 41.)

Intelligence tests are typically heavily loaded with *fluid* intelligence questions at the expense of crystallised, and they are also usually *timed*. This implies that tests of general intelligence are biased against older people (see below). But tests of crystallised intelligence are, arguably, biased *in favour* of older people (there's usually *no* time limit). However, removing the time limit from tests of fluid intelligence doesn't remove the age difference – but it does reduce it. So, the preservation of crystallised intelligence in later life is, in part, illusory (Stuart-Hamilton, 2000).

Physiological changes (such as cardiovascular and metabolic dysfunction) can have serious effects on physiological processes in the brain; in turn, these can lower intellectual performance. For example, *response times* (RTs) are a good indicator of how efficiently the nervous system operates. Not only do we get slower as we get older, but this slowing is strongly correlated with IQ test scores: the slower the RTs, the lower the test score (the *general slowing hypothesis:* Stuart-Hamilton, 2003).

According to Storandt (1976), writing speed accounted for half the difference between old and young people on certain intelligence tests. The prime cause of the decline in intelligence in elderly people is a slowing of nervous system processes (Stuart-Hamilton, 2003). Some argue that an even better indication of change is the state of the *sensory systems* (as measured by vision and hearing). A composite index composed of measures of sensory efficiency correlates impressively with IQ test scores (Baltes & Lindenberger, 1997). Alternative measures of intellectual activity (such as problem-solving or memory: see below) are highly correlated with IQ (Rabbitt, 1993).

Box 39.4 Compensating for slowing down

- A proportion of older people never lose their youthful level of performance. For example, Rabbitt (1980) estimated that 15 per cent maintain their intellectual performance throughout life. This may be partly genetic, partly due to the level and type of their daily intellectual activity. Regular practice at intellectual skills means they're maintained at or near to a youthful level ('use it or lose it': Stuart-Hamilton, 2000).
- A longitudinal study by Schooler & Mulatu (2001) found that people who engage in intellectually demanding work or hobbies also tend to have 'better preserved' intellectual abilities. Such individuals have a lower incidence of dementia, or their symptoms may be less pronounced (Snowdon *et al.*, 2000: see text below).
- Older chess and bridge players perform at the same level as younger opponents (Charness, 1979, 1981). Although they had poorer memories, they could draw on a greater store of strategies and tactics. They *compensated* for the lowering of basic skills by calling on their higher level of experience.
- Such people are reversing the normal trend, which is that we're less often challenged to use our fluid abilities in old age (Cavanaugh, 1995).
- The tendency to continue adding to our knowledge as we grow older could account for the constancy of crystallised intelligence. Alternatively, regular use of our crystallised abilities may help to maintain them (Denney & Palmer, 1981).



Greater experience can compensate for reduction in basic skills

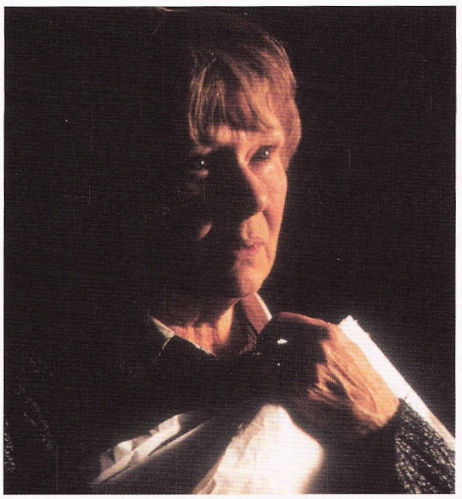
Changes in memory

Some aspects of memory appear to decline with age, possibly because we become less effective at processing information (which may underlie cognitive changes in general: Stuart-Hamilton, 1994). On *recall* tests, older adults generally perform more poorly than younger adults. But the reverse is sometimes true, as shown by Maylor's (1994) study of the performance of older contestants on *Mastermind*. On *recognition* tests, the differences between younger and older people are less apparent and may even disappear. As far as everyday memory is concerned, the evidence indicates that the elderly do have trouble recalling events from their youth and early lives (Miller & Morris, 1993).

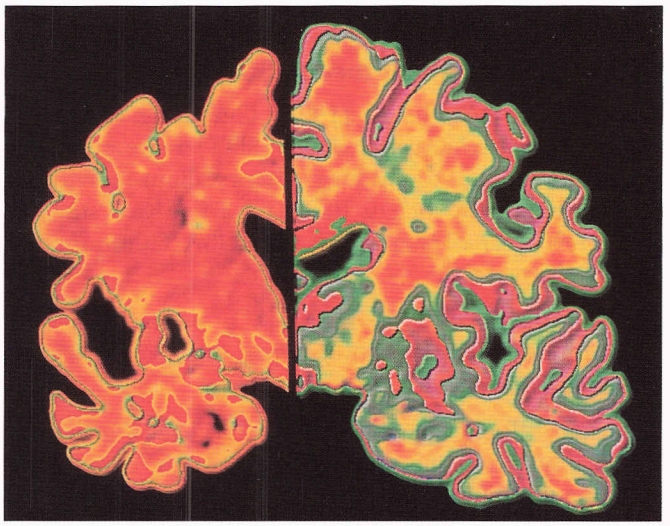
Alzheimer's disease

Significant memory deficits are one feature of dementia, the most common form of which is *Alzheimer's disease* (AD). AD accounts for about half of all cases of dementia, but only 5–15 per cent of over 65s and 20–40 per cent of over 80s are affected (Voss, 2002). Even very late in life cortical neurons seem capable of responding to enriched conditions by forming new functional connections with other neurons. This is supported by the finding that those who keep mentally active are those who maintain their cognitive abilities (Rogers *et al.*, 1990: see above).

AD is one of the most debilitating and dreaded of the common diseases of ageing. It's estimated that over one million people in the UK will be affected by it by 2010. It used to be described more generally as 'senile dementia', but is now referred to as 'senile dementia of the Alzheimer's type'. People at the height of their intellectual powers can be struck down with it. Patients experience a frightening loss of sense of their own identity and access to their store of personal memories. Their brains shrink, and the neurons themselves change appearance (they develop 'tangles and plaques') (Rose, 2003).



Judi Dench as Iris Murdoch, the gifted novelist and academic, in *Iris* (2001). She died from Alzheimer's disease



A CT scan of the brain of an Alzheimer's patient (left) and of a normal person (right)

Disease process or part of normal ageing?

Some researchers claim that Alzheimer's disease is an *accelerated form* of normal changes in the ageing brain, so that we'd all get the disease if we lived long enough. The opposing view is that cognitive decline isn't an inevitable part of ageing, but rather it reflects a *disease process* which is more likely to affect us as we get older (Smith, 1998). Work by the Oxford Project to Investigate Memory and Ageing (OPTIMA) has used X-ray computerised tomography (CT: see Chapter 4) to examine the *medial temporal lobe* (again see Chapter 4). While this tiny area comprises only 2 per cent of the volume of the whole cerebral cortex, it includes the *hippocampus,* a structure known to be crucial for memory (see Chapter 17). Also, the neurons of the medial temporal lobe connect with almost all other parts of the cortex, so any damage to this part of the brain is likely to have consequences for the functioning of the rest of the cortex.

X-ray CT images show that the medial temporal lobe is markedly smaller in people with dementia who eventually die of Alzheimer's disease than in age-matched controls without cognitive deficit. Repeated CT scans over periods of several years have found that shrinkage is slow in control participants (about 1–1.5 per cent per year), compared with an alarming rate of some 15 per cent per year in Alzheimer's patients (Smith, 1998).

These and other supportive data led the OPTIMA researchers to conclude that Alzheimer's disease is distinct from normal ageing, and that it cannot be simply an acceleration of normal ageing. Although cognitive decline does appear to increase with age for the population as a whole, if we rigorously exclude those with pathological changes (such as early Alzheimer's), then a majority may not show any significant decline. According to Smith (1998):

> We must abandon the fatalistic view that mental decline is an inevitable accompaniment of ageing.

Consistent with this conclusion is the belief that negative cultural stereotypes of ageing actually cause memory decline in the elderly.

KEY STUDY 39.1 The influence of stereotypes on memory (Levy & Langer, 1994)

- Levy and Langer investigated the memory capabilities of hearing Americans, members of the American deaf community, and people from mainland China.
- It was assumed that members of the deaf community were less likely to have been exposed to negative cultural stereotypes. People from mainland China were chosen because of the high esteem in which Chinese society holds its aged members.
- The older American deaf participants and the Chinese participants performed much better on memory tasks than the older American hearing participants.
- Also, younger hearing Americans held less positive views of ageing than any of the other groups. Amongst the older participants, attitudes towards ageing and memory performance were positively correlated.
- Levy and Langer believe that negative stereotypes about ageing may become *self-fulfilling prophecies,* so that low expectations mean that people are less likely to engage in activities that will help them maintain their memory abilities.
- The *subliminal* (below conscious awareness) presentation of negative self-stereotypes (e.g. 'Because of my age I am forgetful') tended to worsen memory performance, while positive self-stereotypes (e.g. 'Because of my age I have acquired wisdom') tended to improve it (Levy, 1996). Levy found no such effect with young participants, for whom stereotypes of ageing are obviously less salient (see text above, page 668).

Social disengagement theory (SDT)

According to Manthorpe (1994), Cumming & Henry's (1961) *social disengagement theory* (SDT) represented the first major attempt to produce a theory about individuals' relationships with society. Based on a five-year study of 275 50–90-year-olds in Kansas City, USA, Cumming and Henry claimed that:

> Many of the relationships between a person and other members of society are severed and those remaining are altered in quality.

This social disengagement involves the *mutual withdrawal* of society from the individual (through compulsory retirement, children growing up and leaving home, the death of a spouse, and so on) and of the individual from society (Cumming, 1975). As people grow older, they become more solitary, retreat into the inner world of their memories, become emotionally quiescent, and engage in pensive self-reflection.

Cumming sees disengagement as having three components:

1. *shrinkage of life space* refers to the tendency to interact with fewer other people as we grow older, and to occupy fewer roles
2. *increased individuality* means that in the roles that remain, older people are much less governed by strict rules and expectations
3. *acceptance* (even embrace) *of these changes,* so that withdrawal is a voluntary, natural, and inevitable process, and represents the most appropriate and successful way of growing old.

As far as society is concerned, the individual's withdrawal is part of an inevitable move towards death – the ultimate disengagement (Manthorpe, 1994). By replacing older individuals with younger people, society renews itself and the elderly are free to die (Bromley, 1988).

An evaluation of social disengagement theory

- Bee (1994) sees the first two components as difficult to dispute. However, the third is more controversial because of its view of disengagement as a natural, voluntary, and inevitable process, rather than an imposed one.
- Bromley (1988) argues that such a view of ageing has detrimental *practical* consequences for the elderly, such as encouraging a policy of segregation, even indifference, and the very destructive belief that old age has no value. For Bromley, an even more serious criticism concerns whether everyone actually does disengage.

KEY STUDY 39.2 Do the elderly disengage? (Havighurst *et al.*, 1968)

- Havighurst *et al.* followed up about half the sample originally studied by Cumming & Henry (1961).
- Although increasing age was accompanied by increasing disengagement, at least some remained active and engaged, and they tended to be the happiest. The fact that those who disengage the least are the happiest, have the highest morale and live the longest, contradicts SDT's view that withdrawal from mainstream society is a natural and inherent part of the ageing process (Bee, 1994).
- While some people may choose to lead socially isolated lives and find contentment in them, such disengagement doesn't appear to be necessary for overall mental health in old age.
- Havighurst *et al.* also identified several different *personality types*. These included:
  - *reorganisers*, who were involved in a wide range of activities and reorganised their lives to compensate for lost activities, and
  - the *disengaged*, who voluntarily moved away from role commitments.
- Consistent with SDT, the latter reported low levels of activity but high 'life satisfaction'. However, the disposition to disengage is a *personality dimension* as well as a characteristic of ageing (Bromley, 1988).

- SDT focuses on *quantitative* changes, such as the reduced number of relationships and roles in old age. But for Carstensen (1996), it's the *qualitative* changes that are crucial:

> Although age is associated with many losses, including loss of power, social partners, physical health, cognitive efficiency, and, eventually, life itself – and although this list of losses encompasses the very things that younger people typically equate with happiness – research suggests that older people are at least as satisfied with their lives as their younger counterparts.

The importance of friendships

Although many of these losses are beyond the older person's control (Rosnow, 1985), such as retirement (see below), *friendships* are voluntary, non-institutionalised, and relatively enduring relationships which offer comfort and stability. Informal support from friends (and other primary relationships) also reduces dependency on social security agencies, the helping professions and other formal organisations (Duck, 1991; Rainey, 1998). It's the choice element that differentiates friendships from other types of relationships (Baltes & Baltes, 1986), providing older people with control over at least one life domain (Rainey, 1998).

Maintaining close relationships with others is often a significant factor in determining whether older people feel a sense of belonging to the social system. This may become more important with age, because society withdraws from

older adults both *behaviourally* (compulsory retirement) and *attitudinally* (attributing diminishing powers, abilities and qualities to the elderly). Both relatives and friends are crucial for determining how life is experienced by the elderly. Overall, individual adaptation to old age on all levels has been shown to be highly dependent on personal tolerance of stress and life events, and on the availability of informal social support networks (Duck, 1991). These findings regarding the role of friendships and other relationships are consistent with *socioemotional selectivity theory* (see pages 674-675).

Activity (or re-engagement) theory (AT)

The major alternative to SDT is *activity* (or *re-engagement*) *theory* (AT) (Havighurst, 1964; Maddox, 1964). Except for inevitable biological and health changes, older people are essentially the same as middle-aged people, with the same psychological and social needs. Decreased social interaction in old age is the result of the withdrawal of an inherently ageist society from the ageing person, and happens against the wishes of most elderly people. The withdrawal *isn't* mutual.

Optimal ageing involves staying active and managing to resist the 'shrinkage' of the social world. This can be achieved by maintaining the activities of middle age for as long as possible, and then finding substitutes for work or retirement (such as leisure or hobbies) and for spouses and friends upon their death (such as grandchildren). It's important for older adults to maintain their role counts, to ensure they always have several different roles to play.

An evaluation of activity theory

ASK YOURSELF...

Can you think of any objections to activity theory?

- Is it realistic?
- Does it repeat any of the mistakes of SDT?



Activity theory personified

- According to Bond *et al.* (1993), activity theory can be criticised for being:

> ... unrealistic because the economic, political and social structure of society prevents the older worker from maintaining a major activity of middle age, namely, 'productive' employment.

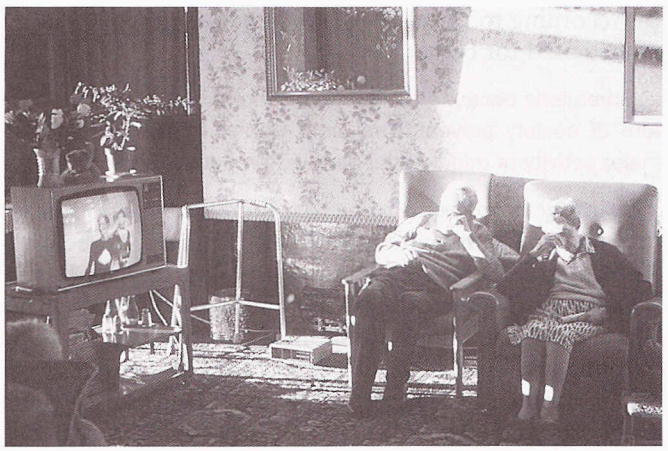
The implication seems to be that there really is no substitute for paid employment (at least for men: see below). According to Dex & Phillipson (1986), society appears to measure people's worth by their ability to undertake paid labour, and the more autonomous people are in their working practices, the more respect they seem to deserve. When someone retires, they not only lose their autonomy and right to work for money, but they also lose their *identity:* they cease to be a participant in society and their status is reduced to 'pensioner/senior citizen' or simply 'old person'.

- As noted in Key Study 39.2, some elderly people seem satisfied with disengagement, suggesting that AT alone cannot explain successful ageing. Nevertheless, activity or re-engagement prevents the consequences of disengagement from going too far in the direction of isolation, apathy, and inaction.
- Just as disengagement may be involuntary (as in the case of poor health), so we may face involuntarily high levels of activity (as in looking after grandchildren). Both disengagement and activity may, therefore, be equally maladaptive. SDT may actually *under*estimate, and AT *over*estimate, the degree of control people have over the 'reconstruction' of their lives.
- Additionally, both theories see ageing as essentially the same for everyone. They both refer to a legitimate process through which some people come to terms with the many changes that accompany ageing (they represent *options:* Hayslip & Panek, 1989). However, people will select styles of ageing best suited to their personalities and past experiences or lifestyles, and there's no single 'best way' to age (Neugarten & Neugarten, 1987). For Turner & Helms (1989), personality is the key factor, and neither theory can adequately explain successful ageing.
- Increasingly, theorists are emphasising the *continuity* between earlier and later phases of life. Satisfaction, morale, and adaptations in later life seem to be closely related to a person's life-long personality style and response to stress and change. According to Reedy (1983):

> In this sense, the past is the prologue to the future. While the personality changes somewhat in response to various life events and changes, it generally remains stable throughout all of adult life.

Social exchange theory (SET)

According to Dyson (1980), both SDT and AT fail to take sufficient account of the physical, social, and economic





The elderly couple above seem to fit the stereotype of the withdrawn, isolated, 'disengaged' person, while the couple below illustrate an alternative, but less common, stereotype, of the person who remains as active in old age as when s/he was middle-aged

factors which might limit people's choices about how they age. Age robs people of the capacity to engage in the reciprocal give-and-take that is the hallmark of social relationships, and thus weakens their attachment to others. In addition, Dowd (1975) argues that:

> Unlike the aged in traditional societies, older people in industrialised societies have precious few power resources to exchange in daily social interaction.

This inequality of power results in dependence on others and compliance with others' wishes. But for both Dyson and Dowd, there's a more positive aspect to this loss of power. Adjusting to old age in general, and retirement in particular, involves a sort of *contract* between the individual and society. The elderly give up their roles as economically active members of society, but in *exchange* they receive increased leisure time, take on fewer responsibilities, and so on. Although the contract is largely unwritten and not enforceable, most people will probably conform to the expectations about being old which are built into social institutions and stereotypes (see Key Study 39.1).

Socioemotional selectivity theory (SST)

According to *socioemotional selectivity theory* (SST) (Carstensen, 1992, 1993; Carstensen & Turk-Charles, 1994), social contact is motivated by various goals, including basic survival, information-seeking, development of self-concept, and the regulation of emotion. While these all operate throughout life, the importance of specific goals varies, depending on one's place in the life cycle. For example, when *emotional regulation* is the major goal, people are highly selective in their choice of social partners, preferring familiar others. This selectivity is at its peak in infancy (see Chapter 32) and old age: the elderly turn increasingly to friends and adult children for emotional support (see above).

According to SST, a major factor contributing to these changes in social motives is *construal of the future,* which is indicated by chronological age. When the future is perceived as largely open-ended, long-term goals assume great significance. But when the future is perceived as limited (see Gould's theory, page 656), attention shifts to the *present*. Immediate needs, such as emotional states, become more salient. So, contrary to SDT (which sees reduced social contact as being caused by emotional states becoming diluted and dampened down), SST predicts that emotional concerns will become *more* important in old age.

An evaluation of SST

- If SST is correct, it would follow that when younger people hold expectations about the future which are similar to those of the elderly, they should make the same kinds of social choices as those typically made by older people.

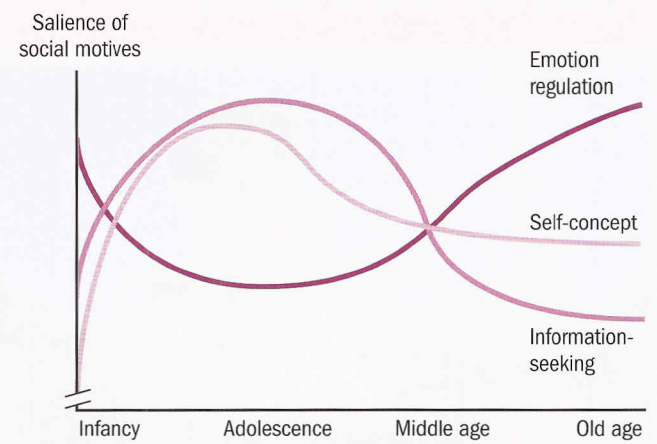


Figure 39.2 Idealised illustration of the lifespan trajectory (from Carstensen, Socioemotional selectivity: A life-span developmental account of social behaviour. In M.R. Merrens & G.C. Brannigan (eds) *The Developmental Psychologists: Research Adventures across the Life-Span*. Copyright 1996, reproduced with permission of the McGraw-Hill Companies.)

KEY STUDY 39.3 How a limited future can influence current concerns (Carstensen, 1996)

- Carstensen describes a study involving a group of healthy gay men, a group of HIV-positive, asymptomatic gay men, and a group of HIV-positive, symptomatic gay men. A group of young, middle-aged and old men representing the general population served as a control group.
- The social preferences of the healthy gay men were similar to those of the young men from the control group. Those of the asymptomatic group mimicked those of the middle-aged controls, while those of the symptomatic group were strikingly similar to those of the oldest control participants. In other words:

The closer the men were to the end of their lives, the greater weight they placed on affective qualities of prospective social partners ... changes in social preferences appear to be altered in much the same way when futures are limited by age as when futures are limited by disease ... (Carstensen, 1996)

- According to Carstensen (1996), the findings relevant to SST taken together paint quite an optimistic picture. Age-related reduction in social contact appears to be highly selective (rather than reflecting a reduced capacity), such that interaction is limited to those people who are most familiar and can provide the greatest emotional security and comfort. This is an excellent strategy when time and social energy need to be invested wisely.

Psychosocial theory

Another alternative to SDT and AT is Erikson's *psychosocial theory* (see Chapter 38). A more valid and useful way of looking at what all elderly people have in common might be to examine the importance of old age as a stage of development, albeit the last (which is where its importance lies).

Erikson's theory suggests that in old age, there's a conflict between *ego-integrity* (the positive force) and *despair* (the negative force). As with the other psychosocial stages, we cannot avoid the conflict altogether, which occurs as a result of biological, psychological, and social forces. The task is to end this stage, and hence life, with greater ego-integrity than despair, and this requires us to take stock of our life, reflect on it, and assess how worthwhile and fulfilling it has been.

The characteristics of ego-integrity

- We believe that life does have a purpose and makes sense.
- We accept that, within the context of our lives as a whole, what happened was somehow inevitable and could only have happened when and how it did.
- We believe that all life's experiences offer something of value, and that we can learn from everything that happens to us. Looking back, we can see how we have grown psychologically as a result of life's ups and downs, triumphs and failures, calms and crises.
- We see our parents in a new light and understand them better, because we've lived through our own adulthood and have probably raised children of our own.
- We realise that we share with all other human beings, past, present and future, the inevitable cycle of birth and death. Whatever the historical, cultural and other differences, we all have this much in common. In the light of this, death 'loses its sting'.

Fear of death is the most conspicuous symptom of despair. In despair, we express the belief that it's too late to undo the past and turn the clock back in order to right wrongs or do what hasn't been done. Life isn't a 'rehearsal'; this is the only chance we get.

RETIREMENT

Retirement has figured prominently in the discussion above of theories of social adjustment in old age. As a *normative, age-graded influence,* it's an inevitable and anticipated loss of work, which many people experience without undue psychological upheaval (Raphael, 1984). However, it may be unacceptable to those who, for example, see themselves as 'too young' to stop work.

ASK YOURSELF...

- What do you imagine some of the major benefits and negative aspects of retirement might be?

One consequence of retirement is the loss of everyday, ritualised patterns of activity, which contribute to the very fabric of our lives. While the early weeks of not working may be celebrated, emptiness may be experienced for a time following retirement. As the months pass, frustration and a sense of 'uselessness' can set in, and this may produce an angry and irritable response to the world.

Retirement is a *process* and *social role* that unfolds through a series of six phases, each of which requires an adjustment to be made (Atchley, 1982, 1985). The phases don't correspond with any particular chronological ages, occur in no fixed order, and not all of them are necessarily experienced by everyone.

Box 39.5 The six phases in the process of retirement

Pre-retirement phase: (i) In the *remote* subphase, retirement is seen as being in a reasonably distant future; (ii) the *near* subphase may be initiated by the retirement of older friends and colleagues, and there may be much anxiety about lifestyle changes, especially financial ones.

Honeymoon phase (immediate post-retirement): This typically involves euphoria, partly due to newfound freedom, and is often a busy period.

Disenchantment phase: This involves a slowing down after the honeymoon phase, with feelings of being let down and even depression. The degree of disenchantment is related to declining health and finances. Eagerly anticipated postretirement activities (e.g. travel) may lose their original appeal. Disenchantment may be produced by unrealistic pre-retirement fantasies, or inadequate preparation for retirement.

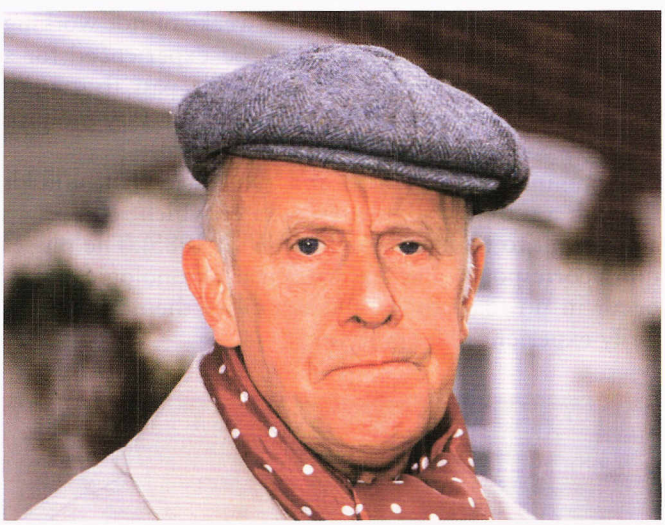
Reorientation phase: This is a time to develop a more realistic view of life alternatives, and may involve exploring new avenues of involvement, sometimes with the help of community groups (e.g. special voluntary or paid jobs for the retired). This helps to decrease feelings of role loss and is a means of achieving *self-actualisation* (see Chapter 9).

Stability phase: This involves the establishment of criteria for making choices, allowing people to deal with life in a fairly comfortable and orderly way. They know what's expected of them, what their strengths and weaknesses are, allowing mastery of the retirement role.

Termination phase: Illness and disability usually make housework and self-care difficult or impossible, leading to the assumption of a sick or disabled (as opposed to retired) role.

(Based on Atchley, 1982, and Atchley & Robinson, 1982)

People who retire *voluntarily* seem to have very little or no difficulty in adjusting. But those who retire because they've reached a compulsory age tend to be dissatisfied at first, although they eventually adapt. The least satisfied are those whose health is poor when they retire (which may have caused their retirement), although health often improves following retirement.



Victor Meldrew (star of BBC TV's *One Foot in the Grave*) seems to personify the sense of frustration and uselessness that often sets in, especially for men, after the 'honeymoon period' of retirement

Bromley (1988) believes that it's the *transition* between employment and retirement that causes adjustment problems. Those who are most satisfied in retirement tend to be scientists, writers and other academics, who simply carry on working with little loss of continuity from very satisfying jobs. Those who discover satisfying leisure activities, with at least some of the characteristics of work, also adjust well. Conversely, some people decide to take *early retirement* (for reasons other than ill-health). This means that retirement isn't necessarily a sudden and enforced dislocation of a working life, inevitably causing feelings of rejection and producing psychological problems.

Retirement and gender

ASK YOURSELF...

- What particular problems would you expect retiring women to experience?

As we saw in Chapter 38, women are increasingly entering the labour market and remaining in it, and so more and more women are having to adjust to their own retirement. At the same time, 'gender-splitting' will mean that home and family still occupy a major part of a working woman's time, and retirement will involve less of a lifestyle change than it will for her husband.

According to Rainey (1998), the increase in numbers of working women aged 45–64 is particularly significant. They're the very age-group that, traditionally, contributes the most time to voluntary organisations and provides informal support for the elderly. There's no evidence that these women are abandoning their caring roles. In fact, these 'women in the middle' appear to be assuming multiple roles: caring for their own families (which includes helping their husbands adjust to retirement and, increasingly, still caring for grown-up children: see Chapter 38), for aged parents, possibly parents-in-law, as well as working. They're caught in the 'caring trap' (Rainey, 1998).

Retirement and unemployment

While retirement is an *anticipated* loss of work, unemployment is sudden and generally unanticipated. According to Campbell (1981), retirement is also an accepted and 'honourable' social status (it's 'achieved'), whereas unemployment isn't. Moreover, retirement is seen as a proper reward for a lifetime of hard work, while for many people unemployment implies failure, being unwanted (or incompetent), and a 'scrounger' who's 'living off the state'. There's a stigma attached to unemployment which can make it a disturbing and degrading experience, while most men see retirement as a rather benign condition of life.

BEREAVEMENT

Although the loss, through death, of loved ones (*bereavement*) can occur at any stage of the life cycle, it becomes more likely as we get older. The psychological and bodily reactions that occur in people who suffer bereavement are called *grief*. The 'observable expression of grief' (Parkes & Weiss, 1983) is called *mourning*, although this term is often used to refer to the social conventions surrounding death (such as funerals and wearing black clothes).

Approaches to the understanding of grief

According to Archer (1999), grief has been variously depicted as (a) a natural human reaction; (b) a psychiatric disorder; and (c) a disease process. All three approaches contain an element of truth. As far as (a) is concerned, grief is a *universal* feature of human existence, found in all cultures. But its form and the intensity of its expression vary considerably (see page 679). As far as (b) is concerned, although grief itself has never been classified as a mental disorder:

> The psychiatric framework emphasises the human suffering grief involves, and therefore provides a useful balance to viewing it simply as a natural reaction ... (Archer, 1999)

Regarding (c), although there may be increased rates of morbidity (health deterioration) or mortality (death) amongst bereaved people, these aren't necessarily directly caused by the grief process. For example, the effects of change in lifestyle (such as altered nutrition or drug intake), or increased attention to physical illness which predated the bereavement, might be mistaken for the effects of grief itself. However, there's substantial evidence that bereaved spouses are more at risk of dying themselves compared with matched non-bereaved controls. This is true mainly for widowers (Stroebe & Stroebe, 1993), and especially for younger widowers experiencing an unexpected bereavement (Smith & Zick, 1996).



Mourners at a Western funeral

Stage or phase accounts of grief

According to Archer (1999), a widely held assumption is that grief proceeds through an orderly series of stages or phases, with distinct features. While different accounts vary in the details of particular stages, the two most commonly cited are those of Bowlby (1980) and Kübler-Ross (1969).

Box 39.6 Bowlby's phase theory of grief

According to Bowlby (1980), adult grief is an extension of a general distress response to separation commonly observed in young children (see Chapter 32). Adult grief is a form of *separation anxiety* in response to the disruption of an attachment bond.

Phase of numbing: Numbness and disbelief, which can last from a few hours up to a week, may be punctuated by outbursts of extremely intense distress and/or anger.

Yearning and searching: These are accompanied by anxiety and intermittent periods of anger, and can last for months or even years.

Disorganisation and despair: Feelings of depression and apathy occur when old patterns have been discarded.

Reorganisation: There's a greater/lesser degree of recovery from bereavement and acceptance of what's occurred.

Kübler-Ross' stage theory: anticipatory grief

Kübler-Ross' (1969) stage view was based on her pioneering work with over 200 terminally ill patients. She was interested in how they prepared for their own imminent deaths (*anticipatory grief*), and so her stages describe the *process of dying*. But she was inspired by an earlier version of Bowlby's theory (Parkes, 1995) and her stages were later applied (by other researchers) to *grief for others*. Her theory remains very influential in nursing and counselling, both with dying patients and the bereaved (Archer, 1999).

Box 39.7 Kübler-Ross' stages of dying

Denial ('No, not me'): This prevents the patient from being overwhelmed by the initial shock. It may take the form of seeking a second opinion, or holding contradictory beliefs.

Anger ('It's not fair – why me?'): This may be directed at medical staff and other healthy people who'll go on living.

Bargaining ('Please God let me ...'): This is an attempt to postpone death by 'doing a deal' with God (or fate, or the hospital), much as a child might bargain with its parents in order to get its own way.

Depression ('How can I leave all this behind?'): This is likely to arise when the patient realises that no bargain can

be struck, and that death is inevitable. S/he grieves for all the losses that death represents.

Acceptance ('Leave me be, I am ready to die'): Almost devoid of feelings, the patient seems to have given up the struggle for life, sleeps more and withdraws from other people, as if preparing for 'the long journey'.

Almost all the patients she interviewed initially denied they had life-threatening illnesses, although only three remained in a constant state of denial (the rest drifted in and out). Denial was more common when someone had been given the diagnosis in an abrupt or insensitive way, or if they were surrounded by family and/or staff who were also in denial. Searching for a second opinion was a very common initial reaction, representing a desperate attempt to change the unpredictable world they'd just been catapulted into, back into the world they knew and understood (March & Doherty, 1999).

Depression is a common reaction in the dying. For example, Hinton (1975) reported that 18 per cent of those who committed suicide suffered from serious physical illnesses, with 4 per cent having illnesses that probably would have killed them within six months. Terminally ill patients suffer from what Kübler-Ross called *preparatory depression* (as opposed to *reactive*).

Elderly people who've lived full lives have relatively little to grieve for – they've gained much and lost few opportunities. But people who perceive lives full of mistakes and missed opportunities may, paradoxically, have *more* to grieve for as they begin to realise that these opportunities are now lost forever. This resembles Erikson's despair (see above), as does *resignation*, which Kübler-Ross distinguished from acceptance. The detachment and stillness of those who've achieved acceptance comes from calmness, while in those who've become resigned it comes from despair. The latter cannot accept death, nor can they deny its existence any longer (March & Doherty, 1999).

Box 39.8 Ramsay and de Groot's nine components of grief

Shock: This is usually the first response, most often described as a feeling of 'numbness', which can also include pain, calm, apathy, depersonalisation, and derealisation. It's as if the feelings are so strong that they're 'turned off'. This can last from a few seconds to several weeks.

Disorganisation: This can be the inability to do the simplest thing, or, alternatively, organising the entire funeral and then collapsing.

Denial: Behaving as if the deceased were still alive is a defence against feeling too much pain. It's usually an early feature of grief, but one that can recur at any time. A common form of denial is searching behaviour (e.g. waiting for the deceased to come home, or having hallucinations of them).

Depression: This emerges as the denial breaks down but can occur, usually less frequently and intensely, at any point during the grieving process. It can consist of either 'desolate pining' (a yearning and longing, an emptiness interspersed with waves of intense psychic pain) or 'despair' (feelings of helplessness, the blackness of the realisation of powerlessness to bring back the dead).

Guilt: This can be both real and imagined, for actual neglect of the deceased when they were alive, or for angry thoughts and feelings.

Anxiety: This can involve fear of losing control of one's feelings, of going mad, or more general apprehension about the future (changed roles, increased responsibilities, financial worries, and so on).

Aggression: This can take the form of irritability towards family and friends, outbursts of anger towards God or fate, doctors, nurses, the clergy or even the person who's died.

Resolution: This is an emerging acceptance of the death, a 'taking leave of the dead and acceptance that life must go on'.

Reintegration: This involves putting acceptance into practice by reorganising one's life in which the deceased has no place. However, pining and despair may reappear on anniversaries, birthdays, and so on.

An evaluation of stage theories of grief

- Generally, stage models haven't been well supported by subsequent research. Both Bowlby's and Kübler-Ross' accounts were proposed before any prolonged, detailed follow-up studies of bereaved people had been undertaken (Archer, 1999).
- According to March & Doherty (1999), they represent generalisations from the experience of some individuals and lack the flexibility necessary to describe the range of individual reactions. Grief *isn't* a simple, universal process we all go through (Stroebe *et al.*, 1993).
- Some researchers prefer to talk about the *components of grief*. Ramsay & de Groot (1977), for example, have identified nine such components, some of which occur early and others late in the grieving process.
- However, many stage theorists have explicitly *denied* that the stages are meant to apply equally and rigidly to everyone. For example, Bowlby (1980) himself said that:

  > These phases are not clear-cut, and any one individual may oscillate for a time back and forth between any two of them ...

- Yet stages provide us with a framework or guidelines for understanding the experiences of bereaved and dying individuals, while at the same recognising that there's a huge variability in the ways individuals react. Stages don't prescribe where an individual 'ought' to be in the grieving process (March & Doherty, 1999).

Cultural influences on reactions to bereavement

Because of the huge individual variability, trying to distinguish 'normal' from 'abnormal' grief seems quite arbitrary (Schuchter & Zisook, 1993). According to Middleton *et al.* (1993), the validity of the concept of *pathological grief* must be considered in terms of *cultural norms.* Although grief is a universal response to major loss, its meaning, duration and how it's expressed, are all culturally prescribed.

Inter- and intra-cultural differences

Cultures differ in how they define death and appropriate expressions of grief. According to Rosenblatt (1993):

> Culture is such a crucial part of the context of bereavement that it is often impossible to separate an individual's grief from culturally required mourning.

For example, in cultures that believe 'do not grieve because grief will cause the ghost of the deceased to take you away' or 'do not grieve because the deceased has gone to a better life', it's difficult to assess accurately what appears to be muted or restrained grief. Similarly, when the 'rules' say 'cry', and people cry, how do we know the grief is genuine, deeply felt and likely to occur in the absence of the cultural demands for crying.

The Jewish rites of mourning are believed to be of therapeutic benefit, enabling the expression, rather than the repression, of grief. For the first few days following a burial, mourners are expected to be distressed and their despair is recognised and supported by relatives and friends who come to pay their respects.

By contrast, the Hindu, Sikh, Muslim and Buddhist religions all discourage too much weeping (Firth, 1993). The Hindus believe that weeping makes a river which the soul of the deceased has to cross, and Sikhs believe the deceased has gone to God. However, the expression of grief is less inhibited in villages on the Indian sub-continent compared with Sikhs and Hindus living in Britain. Similarly, wailing is still very common among Muslims in Muslim countries (Firth, 1993).

Compared with western women, Japanese women accept their husbands' death with composure and resignation. They believe strongly in an afterlife, and that their ancestors are always with them. Their beliefs mitigate feelings of complete loss and, to this extent, they have less to grieve about. The long-lasting grief and depression observed among the bereaved in the UK is partly a result of the lack of rituals and beliefs, as well as the lack of an externally based end to the grieving process (March & Doherty, 1999).

Box 39.9 Culture and the length of the grieving process

- In traditional Navajo Indian culture, the expression of grief lasts for four days following the death (March & Doherty, 1999).
- For Hindus in India, the mourning period lasts 10–16 days.
- For orthodox Jews, there are five graduated periods of mourning: (i) between death and the burial (which occurs as soon as can be arranged); (ii) immediate postburial; (iii) seven days following the burial (the *shiva* week); (iv) 30 days from the burial (marking the official end of mourning, unless it's a parent who's died, in which case it continues for a whole year); finally (v) between 30 days and one year, when the memorial stone is erected (Katz, 1993).



The degree to which weeping is acceptable or encouraged at funerals varies between religious and cultural groups

According to Firth (1993), all the major religions of the world teach that there's some sort of continuity or survival after death. They also comfort and reassure the bereaved by helping to make sense of death and personal loss, providing shape and meaning to the grieving process. As Box 39.9 shows, mourning lasts for a clearly defined period in different cultures, providing 'milestones'. These allow the bereaved a gradual time to let go of the deceased and adjust to the psychological and social changes in their lives.

As well as differences between cultures, there are also important differences *within* culturally diverse countries, such as the USA and the UK. For example, WASP (white Anglo-Saxon Protestant) Americans tend to 'psychologise' their emotional pain (e.g. depression), while people in many ethnic minority groups tend to 'somatise' theirs (e.g. bodily symptoms: Kleinman & Kleinman, 1985).

CONCLUSIONS

The different meanings of 'old' suggest that chronological age is a poor indicator of what a particular elderly individual is like, either psychologically or socially. However,

major theories of social adjustment to old age, such as SDT and AT, tend to regard the elderly as basically all the same. This implies that there's a particular way of ageing successfully, a view not shared by other theories and not supported by research evidence.

Similarly, the view that ageing inevitably involves rapid and generalised cognitive decline isn't supported by research evidence. Both intelligence and memory have many facets, which tend to decline at very different rates.

Retirement is a socially imposed loss of work, which has both social and psychological effects, as does bereavement. Attempts to identify stages of grief that apply equally to everyone have proved largely unsuccessful, partly because of individual variability and partly because of both inter- and intra-cultural differences in how death and grief are understood and managed.

According to Voss (2002):

> ... Older people may not feel old; they may not feel any different than they did during their younger years. They simply face life from an angle that bears the shadow of death more acutely than before. This provides them with an insight unavailable to others and the wisdom not yet achieved by those trying to help them. Acknowledging this is an invaluable part of promoting the respect that older people deserve as fellow human beings ... we should ... help older adults to welcome integrity and wisdom, in whatever form, at the conclusion of their winter years.

CHAPTER SUMMARY

- While 'growing up' has positive connotations, 'growing old' has negative ones, reflecting the **decrement model**. An alternative, more positive view, is the **personal growth model**.
- One feature of **ageism** is the assumption that **chronological age** is an accurate indicator of **biological**, **subjective**, **functional** and **social age**. **Stereotypes** of the elderly are deeply rooted in rapidly changing western societies, where their experience and wisdom are no longer valued.
- The aged are a collection of **subgroups**, each with its own problems and capabilities. We need to change our stereotypes of the elderly as being needy, non-productive, and unhappy.
- The claim that intelligence declines fairly rapidly in old age is based on **cross-sectional studies**, which suffer from the problem of the **cohort effect**. **Longitudinal studies** indicate that while **crystallised intelligence** increases with age, **fluid intelligence** declines for all age groups over time.
- Some aspects of **memory** decline with age, perhaps due to less effective **information-processing**. Older adults generally perform more poorly than younger adults on **recall** tests, but the differences are much smaller when **recognition** tests are used.
- Evidence from the **OPTIMA project** suggests that **dementia** (such as **Alzheimer's disease**) isn't an accelerated form of normal ageing. Rather, it appears to reflect a **disease process** which is more likely to affect us as we get older.
- **Negative cultural stereotypes** of ageing actually cause memory decline in the elderly, and may become **self-fulfilling prophecies**.
- The most controversial claim made by **social disengagement theory** (SDT) is that the elderly accept and even welcome disengagement, and that this is a natural and inevitable process.
- SDT emphasises the **quantitative** changes to the exclusion of the **qualitative** changes, which may become more important with age. The latter include **friendships**, which are under the older person's control and provide essential informal support.
- **Activity or re-engagement theory** (AT) claims that older people are psychologically and socially essentially the same as middle-aged people. The withdrawal of society and the individual isn't mutual, and optimal ageing involves maintaining the activities of middle age for as long as possible.
- According to **social exchange theory** (SET), older people in industrialised societies have few power resources to exchange in everyday social interaction, making them dependent on others. But the elderly relinquish their roles as economically active members of society in exchange for increased leisure time and fewer responsibilities.
- **Socioemotional selectivity theory** (SST) maintains that for the elderly, **emotional regulation** assumes major importance, making them highly selective as regards social partners. This change in social motives is largely determined by **construal of the future**.
- According to Erikson's **psychosocial theory**, old age involves a conflict between **ego-integrity** and **despair**. The task of ageing is to assess and evaluate life's value and meaning. Despair is characterised by a fear of death.
- **Retirement** is an inevitable, **anticipated** loss of work. People who retire **voluntarily** have little or no difficulty in adjusting, compared with those who are forced to retire. It's the **transition** between employment and retirement that causes adjustment problems.
- Compared with **unemployment**, retirement has an accepted and honourable social status and is a proper reward for a hard life's work.
- **Grief** has been portrayed as a **natural**, **universal human reaction** to bereavement, a **psychiatric disorder**, and a **disease process**.
- **Stage theories** have been criticised on the grounds that grief isn't a simple, universal process which is the same for everyone. However, stages provide a **framework** for understanding bereaved people's experiences, which display a **huge variability**.
- Although grief is a universal response to major loss, its meaning, duration and expression are all **culturally prescribed**. Cultures differ in how they define death,

and it's often impossible to separate an individual's grief from culturally required mourning.

- All the world's major religions teach that there's some kind of **after-life**. They also comfort the bereaved by helping to make sense of death and by providing '**milestones**', which allow a gradual time to adjust to life without the deceased.

Links with other topics/chapters

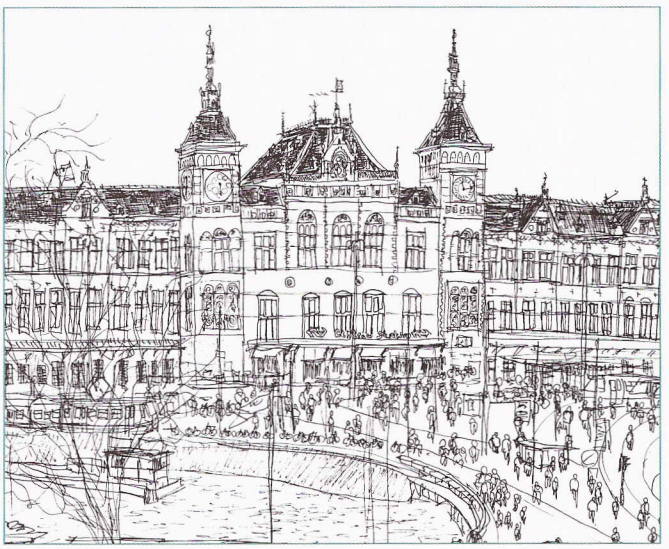
- Ageism is one of the '-isms' that refer to *prejudiced attitudes* and *discriminatory behaviour* (Chapter 25).
- As with other prejudiced attitudes, *stereotypes* of the elderly form the cognitive component, helping to make the world more predictable and 'controllable' (Chapter 22).
- Measured intelligence is expressed as an *intelligence quotient* (IQ). This measures an individual's standing *relative* to some comparison group (such as people of a similar age). So, while *raw scores* on a test of general intelligence decline with age, one's IQ doesn't (Stuart-Hamilton, 2000, 2003) (Chapter 41).
- *Expert chess players* show better memory than non-experts for actual (possible) chess positions, but there's no difference between them if the pieces are placed randomly (Chapter 20). Based on their greater experience, elderly players may be displaying a similar superiority when they perform as well as younger opponents (Chapter 20).
- The distinction between *recall* and *recognition memory* is important for demonstrating that 'memory-as-retrieval' can mean different things. The greater similarity of performance between younger and older participants is what we'd predict from the greater sensitivity of recognition (Chapter 17).
- The loss of personal identity through loss of access to personal (*autobiographical*) memories suffered by Alzheimer's patients is also experienced by some *amnesic patients* who suffer damage to their *hippocampus*. But the latter don't suffer the general – and eventually fatal – neurological deterioration faced by Alzheimer's sufferers (Chapter 17).
- The theme of continuity between early experience and later personality/relationships is central to understanding *attachments*, including Bowlby's attachment theory (Chapter 32), as well as being a key feature of Freud's *psychoanalytic theory* (Chapters 2 and 46).
- SET in the context of ageing has a rather different meaning from the one it has in the context of *interpersonal relationships/attraction*. Here, it involves a *giving up* of active-adult status in return for benefits of an 'old-age' status. In discussion of relationships, individuals exchange rewards that will determine how much each partner wishes to stay (Chapter 28).
- The greater risk of death amongst widowers (compared with widows) is consistent with findings relating to the greater benefits of *marriage* for men and their greater difficulty in adjusting to *divorce* (Chapter 38).
- Traditionally, a distinction has been made between *reactive* (*neurotic*) and *endogenous* (*psychotic*) *depression*, although this is now much more controversial and less commonly made (Chapter 44).

Giftedness
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The unevenness of giftedness
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Accounting for giftedness
Brain development and organisation
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Autism
Definition and classification
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40

APPLICATION

EXCEPTIONAL DEVELOPMENT



INTRODUCTION AND OVERVIEW

Sufiah Yusof began a maths degree at Oxford University in 1997 at the age of 13, becoming one of the youngest ever undergraduates in the UK. A few years earlier, Ruth Lawrence graduated with a first class degree from Oxford – she was also 13. At 14, Alexander Faludy became one of the youngest ever people to win a place at Cambridge University. With an IQ of 178 (see Chapter 41), he can deliver verbal dissertations of enormous range and complexity, but he can write only two (illegible) words a minute: he's dyslexic (Martin, 2000).

The drawing above of Central Station, Amsterdam, was done by Stephen Wiltshire, who, as well as having extraordinary artistic skill, is autistic. Recent UK research suggests that a certain proportion of children with Down's syndrome may also be autistic.

What do all these cases have in common? They are all *exceptional*, in the sense of *atypical* (see Chapter 43). The average age for becoming an undergraduate is 18, most undergraduates don't have IQs anywhere close to 178, most people aren't dyslexic, or autistic, nor do they have the artistic (or other exceptional) abilities demonstrated by Stephen Wiltshire and other *savants* (or *idiots savants* as they used to be called). Down's syndrome occurs in about 100 per 100,000 live births (Carpenter, 1997).

'Exceptional' usually implies 'exceptionally bright' or 'unusually gifted', but these various examples illustrate the more accurate sense of 'exceptionally different'. However:

> It is very easy, when dealing with an atypical child, to be overwhelmed by the sense of differentness. But as Sroufe and Rutter and all the other developmental psychopathologists are beginning to say so persuasively, the same basic processes are involved. (Bee, 2000)

To emphasise the differences implies that 'ordinary' and 'exceptional' are *qualitatively different*, while to look for common processes implies that the differences are merely *quantitative*. The examples also illustrate that different types of exceptional abilities (e.g. very high IQ and dyslexia) can be fousnd together *in the same individual*.

GIFTEDNESS

What do we mean by 'gifted'?

According to Smith *et al.* (1998):

> A child may be described as 'gifted' who is outstanding in either a general domain (such as exceptional performance on an intelligence test) or a specific area of ability, such as music, or sport ....

However, the borderline between gifted children and others isn't clearly defined, and different researchers have used different criteria. In Winner's (1998) view, gifted children and child *prodigies* (who are just extreme versions of gifted children) differ from average and bright children in three ways:

1. they're *precocious* – they master subjects earlier and learn more quickly
2. they 'march to their own drummers' – they make discoveries on their own and can often solve problems intuitively, without going through a series of logical, linear steps
3. they're driven by 'a rage to master' – they have an intense interest in the area or domain in which they excel, and can readily focus so intently on work in this domain that they lose sense of the outside world.

They also seem to have unusually good *metacognitive skills:* they know what they know and don't know, and spend more time than average-IQ children planning how to go about solving a problem (Bee, 2000). They seem to teach themselves to read as toddlers, breeze through college maths in middle school, and draw more skilfully at age seven than most adults:

> Their fortunate combination of obsessive interest and an ability to learn easily can lead to high achievement in their chosen domain. But gifted children are more susceptible to interfering social and emotional factors than once was thought ... (Winner, 1998)

KEY STUDY 40.1 Gifted Termites (Terman, 1925; Terman & Ogden, 1959; Holahan, 1988)

- The most famous study of giftedness is Terman's Stanford longitudinal study, which began in 1921.
- Based on his definition of giftedness as an IQ score of around 140 (on the Stanford–Binet test: see Chapter 41), 643 Californian ten-year-olds (the 'Termites') were first nominated by their teachers and then their intelligence was assessed. Their mean score was 151, with a range of 130–190 (only 22 scored below 140).
- They were followed up at various points for much of their lives.
- Their physical health and growth were superior from birth onwards, they walked and talked early, and excelled in reading (which they learnt to do before starting school), language, and general knowledge. Their parents described them as insatiably curious and having superb memories.
- By 1947 (average age 35), their initial level of intelligence had been maintained. 68 per cent had graduated from college, and many were already enjoying outstanding careers. By 1959, this occupational achievement continued. For example, 70 had been listed in the *American Men of Science*, and three were members of the highly prestigious National Academy of Science. In addition, 31 were listed in the *Who's Who in America*, and ten appeared in the *Directory of American Scholars*.

(Based on Smith *et al.*, 1998; Sternberg, 1990; Winner, 1998)

An evaluation of Terman's study

Terman's study showed that gifted children are, perhaps not surprisingly, highly likely to become successful adults. However, the sample of children was biased in at least two important ways (Winner, 1998).

1. Working-class and ethnic minority children were under-represented. Almost one-third of the children

came from middle-class, professional families, so that at least some of their success may have been due to social-class factors as well as to their high IQs.

2. Children participated in the study only if nominated by their teachers, who probably overlooked those gifted children who were misfits, loners or difficult to teach. It was these same admiring teachers who gave such glowing evaluations of their social adjustment and personality.

Terman described the children as superior not just intellectually, but also in terms of their health, social adjustment and moral attitude. According to Winner, this helped create the myth that gifted children are happy, well-adjusted by nature, requiring little special attention, and easy-to-teach. The myth persists despite more recent evidence to the contrary.



Charlotte Church singing at the first inauguration of President Bush in 2001

Some disadvantages of giftedness

Children with exceptionally high abilities in any area (including the visual arts, music and athletics) are out of step socially with their peers. They tend to be highly driven, independent in their thinking and introverted. They spend an unusual amount of time alone and, although deriving pleasure and energy from their solitary mental lives, they also report feeling lonely. The more extreme the level of giftedness, the more isolated they feel (Winner, 1998).

It's been estimated that 20–25 per cent of profoundly gifted children have social and emotional problems (about twice the normal rate), while the moderately gifted show the average rate. By mid-childhood, they often try to hide their abilities in the hope of becoming more popular. One group particularly at risk for such underachievement is that of academically gifted girls, who report more depression, lower self-esteem and more psychosomatic symptoms than academically gifted boys.

ASK YOURSELF...

- Why do you think this sex difference might occur?

CASE STUDY 40.1 Sufiah Yusof

- As mentioned in the *Introduction and overview*, Sufiah Yusof became an Oxford University maths undergraduate at the age of 13.
- She made the headlines in the summer of 2000, when she disappeared shortly after completing her final exams. After the police found her, they took the unusual step of revealing that Sufiah had requested that her whereabouts should remain secret – even (especially) from her parents. Earlier in the week that she was found, she sent her family an e-mail, in which she declared:

  I've finally had enough of 15 years of physical and emotional abuse ...

- She vowed never to return to the 'living hell' of home. She accused her father of ruining his five children's lives by brainwashing and *hothousing* them; in her father's words: 'The goals were to prove that you can accelerate children's learning process ... one can nurture and accelerate learning programmes'.
- At 11, she had twice attempted suicide.

(Based on Hattenstone & Brockes, 2000)



Sufiah Yusof pictured in Oxford in 1998 with her father, Farooq

While Sufia's case may not be typical, it's not unique. There are some striking parallels between Sufia's case and that of Ruth Lawrence (see *Introduction and overview*).

Gross (1993) describes the case of Ian. At age five, he hated school, was uncontrollable in class, aggressive towards other children, and was referred to a special school for behaviourally disturbed children. He was found to have an IQ of over 170 (on the Stanford–Binet)

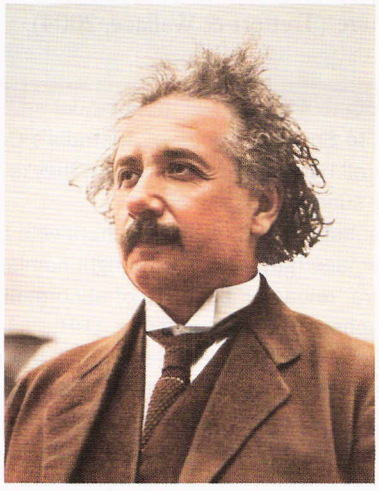
and a reading age of 12. At age nine, his IQ was 200, but his school insisted that he follow the curriculum designed for nine-year-olds. This raises crucial questions regarding how gifted children in general should be educated (see Box 40.1, page 689).

Other researchers (e.g. Gottfried *et al.*, 1994), however, maintain that gifted children have about the same risk of social and emotional problems as normal-IQ children, so that most are well adjusted and socially adept. But the profoundly gifted (e.g. IQs over 180) are so different from their peers, they're likely to be seen as strange and disturbing. They have difficulty finding others who can play at their level (Bee, 2000).

The unevenness of giftedness

Certain gifted children can leap years ahead of their peers in one area, yet fall behind in another. These *unevenly gifted* children sometimes seem hopelessly out of sync. Terman promoted the view that gifted children were *globally* gifted, that is, evenly talented in all academic areas. Indeed, some children do fit this stereotype of the all-round high-achiever. However, many display giftedness in one area but are unremarkable, or even disabled, in others. These may be creative children who are difficult in school, and not immediately recognised as gifted.

This unevenness is quite common. Winner (1998) cites a survey of over 1000 highly academically gifted adolescents, which found that over 95 per cent had a strong disparity between mathematical and verbal abilities. Extraordinarily strong mathematical and spatial abilities often accompany average or even deficient verbal skills. A good example is Albert Einstein, who was sacked from two teaching jobs for terrible spelling, and once said: 'If I can't picture it, I can't understand it'. Similarly, Thomas Edison, inventor of the light bulb and phonograph, had spelling, grammar, and learning problems ('I almost decided I must be a dunce', he once admitted). Even Leonardo da Vinci had erratic spelling, and scribbled notes backwards (Martin, 2000).



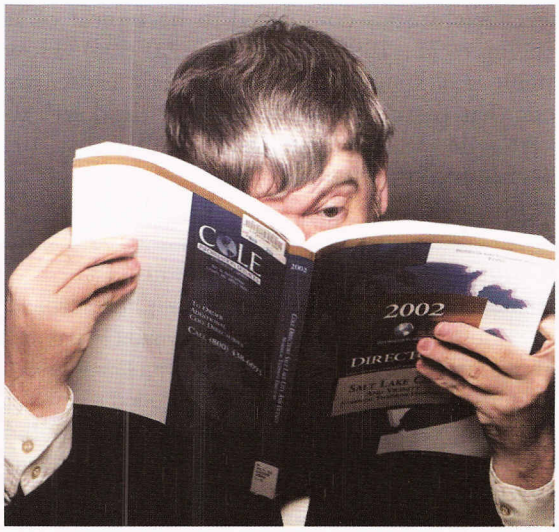
Albert Einstein (1879–1955), unevenly gifted

Savants

Many children who struggle with language may have strong spatial skills, and the association between verbal deficits and spatial gifts seems especially strong among visual artists. The most unevenly gifted of all are the *savants,* such as Stephen Wiltshire.

The term 'idiots savants' was first used by Langdon Down (best known for having identified Down's syndrome) in 1887 to describe the coexistence in some individuals of low general cognitive functioning and above-average specific ability. They appear to be able to use processing strategies within a particular domain that seems independent of their general level of intelligence. While recognised for almost 200 years, savants were reported mainly in the form of descriptive case histories.

Savant syndrome and autism



Kim Peek

Savant syndrome is seen in about one in ten people with autism, and in approximately one in 2000 people with brain damage or mental retardation. Of the known savants, at least half are autistic, and the rest have some other kind of developmental disorder (Treffert & Wallace, 2004). The syndrome generally occurs in people with IQs between 40 and 70 – although it can occur in some with IQs up to 114 or over. It disproportionately affects males (four to six males for every female).

The skills involved in savant syndrome are rather limited in their range, restricted mainly to *right-hemisphere* non-symbolic, artistic, visual and motor abilities. They include music, art, maths and various forms of calculating (such as calendar-counting). For example, Kim Peek can tell you what day of the week you were born on and on what day you'll celebrate your 65th

birthday. Despite being developmentally disabled, he knows more than 7600 books by heart, as well as every area code, highway, zip code and television station in the USA. He provided the inspiration for Dustin Hoffman's character Raymond Babbit in *Rain Man* (1988) (Treffert & Wallace, 2004).

In 1983, O'Connor and Hermelin began a series of systematic, controlled experimental studies with groups of musical, calendar-calculating, and artistic savants. Their main aim was to find out why there was a marked frequency of individuals with autism in the savant population.

In discussing Stephen Wiltshire, Sacks (1995) asked whether one could speak of a 'distinctive autistic art'. He points to the concreteness, detailed perceptual accuracy, and the 'thisness' of Stephen's drawings of cars and buildings, with which he's preoccupied. At art school, he displayed an exceptional ability to depict space and distance in perspective (Pring & Hermelin, 1997). Such a remarkable focusing on perceptual details of a display, and on their accurate reproduction, are reminiscent of some of the characteristics considered to be typical of autism (Hermelin *et al.*, 1999: see pages 690-696). However, Hermelin *et al.*'s study of several autistic artists strongly suggests that there's no stereotyped 'autistic art'; that is, their art reflects true artistic talent rather than being a manifestation of their autism.

CASE STUDY 40.2 Richard (Hermelin *et al.*, 1999)

- Richard (born 1952) is autistic, mentally handicapped, and suffers from a severe congenital visual impairment: he's extremely myopic and has glaucoma (increased pressure in the eye) which is well controlled by medication. His verbal IQ is 47, and his non-verbal IQ is 55. He began to draw at the age of four, and now uses exclusively oil-based coloured crayons on paper.
- He doesn't look at other artists' work, but goes to the local library and studies landscape photographs and brochures in the travel agency. Days, weeks, or even months later he'll reproduce one of these pictures from memory. Sometimes he'll draw a natural setting he's looked at through binoculars. He's had many exhibitions all over the world, and he earns a living as a professional artist.
- Based on a comparison between his drawings and the photographs they're often based on, an art expert judges him to display true artistic talent. Moreover, like Cézanne and Monet, who were both myopic, Richard's visual impairment may have worked to his advantage. Hermelin *et al.* suggest that:

  It relieves an individual from direct precise visual input and by necessity gives him the freedom to impose his own distorted image, thus generating his own representation of reality.

CASE STUDY 40.3 Hikari Kenzaburo

- Hikari was born in 1963 with a growth on his brain that made him look as if he had two heads. He was severely autistic, had constant seizures, and poor vision. He could fly into rages and needed constant attention, patience and reassurance. He never cried and didn't seem ever to dream.
- Yet even as a toddler, he'd listen, enthralled, to music, and to bird-song. His parents encouraged this sign of imagination, feeling that music could perhaps reach and touch him as nothing else could. In fact, Hikari could also express himself and reach others through music.
- While words are blunt and hopeless tools, he can compose musical works for violin and piano, which his father describes as a 'wailing soul', embodying a 'core of sorrow'.

(Based on Gerrard, 1996)

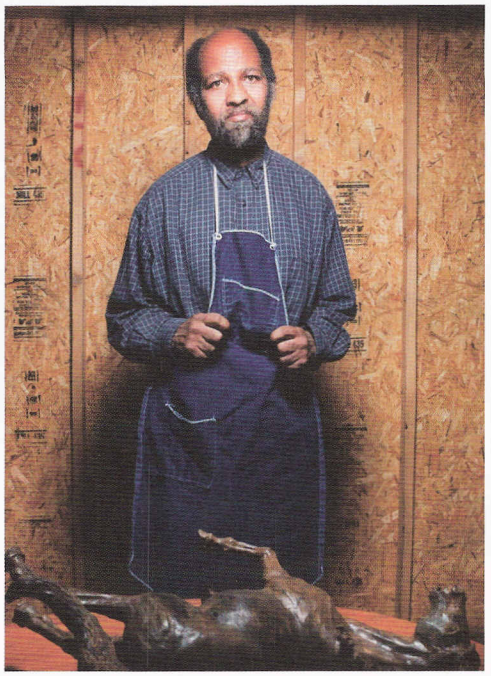
A biological explanation: the left hemisphere hypothesis (LHH)

The most powerful currently available explanation of savant syndrome claims that some injury to the left hemisphere of the brain causes the right hemisphere to *compensate* for the loss. As we've seen, savant abilities are predominantly *right hemisphere,* which is consistent with the LHH. Also consistent with the LHH is Baron-Cohen's (2003) *Empathising-Systemising* (E-S) *theory* of autism, according to which autistic individuals have extreme *male brains* (that is, brains that are hardwired for *right-hemisphere* skills and abilities: see below). Further support comes from the study of elderly patients with *frontotemporal dementia* (FTD), a form of pre-senile dementia (see Chapter 39). Some of these patients suddenly develop artistic skills they didn't previously possess, and all of them show damage on the *left* side of the brain. They become savant-like (visually creative: a right-hemisphere ability) as dementia takes hold in their left hemisphere (Treffert & Wallace, 2004).

Research update 40.1 Are we all potential savants?

- According to Snyder (director of Australia's Centre for the Mind), we all have amazing skills, but they're concealed within our subconscious mind.
- In some autistic individuals and others with left-hemisphere damage (savants), these (right-hemisphere) abilities are 'released' because of abnormalities in the left hemisphere (as claimed by the LHH).
- In addition to people suffering from FTD, there are cases of savant skills appearing suddenly in people following brain damage. For example, one ten-year-old child suddenly acquired spectacular calendar-calculating skills and an extraordinary memory for dates and music following an injury to the left side of the head. Another

famous case is Alonzo Clemons, who developed a striking talent for animal sculpture following a childhood head injury (Phillips, 2004b).



Alonzo Clemons can create perfect wax replicas of any animals he sees, no matter how briefly

- It follows that if you can reduce or stop electrical activity in the left hemisphere, it might be possible to unlock the 'little Rain Man in each of us' (Treffert & Wallace, 2004).
- Snyder has attempted this, using a technique called *repetitive trans-cranial magnetic stimulation* (rTMS). This is used routinely in neurology departments and hospitals as a research tool to test for side-effects of brain surgery, and to establish the function of different brain regions. It basically uses a strong magnetic field to switch off activity in the nearby part of the brain.



A TMS machine

- Snyder's initial results were published in 2003. Only four out of eleven participants responded, but in those four there were some notable effects in their drawing style and their ability to spot non-obvious mistakes in written prose. Other researchers have replicated Snyder's findings (Phillips, 2004b).
- Treffert and Wallace (2004) agree with Snyder's claims, concluding that:

  ... all of us have some of the same circuitry and pathways intrinsic to savant functioning but ... these are less accessible – in part because we tend to be a left-brain society. Sometimes, though, we can find elements of the savant in ourselves. At certain moments, we just 'get' something or discover a new ability ...

Accounting for giftedness

Brain development and organisation

Non-savant gifted children most likely have atypical brain organisation to some extent too (Winner, 1998). Individuals with pronounced right-hemisphere abilities (maths, music, and art) are disproportionately *non*-right-handed (they're either left-handed or ambidextrous). They also have higher than average rates of left-hemisphere deficits (such as delayed speech onset, stuttering, or dyslexia).

Geschwind and Galaburda (in Winner, 1998) hypothesised that this association of gift and disorder ('the pathology of superiority') results from the effects of testosterone on the developing foetal brain. Raised levels can delay development of the left hemisphere ('testosterone poisoning'), which might in turn produce compensatory right-hemisphere growth. This might also account for the larger number of males than females who display mathematical and spatial gifts, non-right-handedness, and language disorders.

Although this hypothesis is controversial, and there's only scant evidence to support the theory of damage and compensation in savants, Winner (1998) believes that:

... it seems certain that gifts are hardwired in the infant brain, as savants and gifted children exhibit extremely high abilities from a very young age before they have spent much time working at their gift.

ASK YOURSELF...

- In light of the discussion above about the LHH, do you agree with Winner's conclusions?
- Does describing someone as talented help explain his/her exceptional ability?
- If so, where do you think this talent comes from?

The 'talent account': geniuses are born

The quote from Winner above partially defines the 'talent account' of giftedness, the widely held belief that the likelihood of becoming exceptionally competent depends on the presence or absence of inborn attributes ('talents', 'gifts', 'natural aptitudes': Howe *et al.*, 1998). The judgement that someone is talented is believed to help *explain* (not merely describe) that person's success. According to Howe *et al.*, certain assumptions are made about talent:

- it originates in *genetically transmitted structures,* and so is at least partly *innate*
- its full effects may not be evident at an early age, but there will be some advance indications that allow trained people to spot its presence before exceptional levels of mature performance have been shown
- these early indications of talent provide the basis for predicting who's likely to excel
- only a minority is talented – if all children were, we couldn't predict or explain differential success
- talents are relatively *domain-specific.*

For Gardner (1993), talent is a sign of precocious biopsychological potential in a particular domain, such as dance, chess, or maths (see his theory of *multiple intelligences:* Chapter 41). Similarly, Winner (1996) sees talents as unlearned, domain-specific traits that may develop or 'come to fruition' in favourable circumstances – but they cannot be manufactured.

Is the talent account valid?

According to Howe (1999), although it's widely accepted that innate talents can explain how genetic differences between people impact on their capabilities,

> ... there are good reasons for thinking that such talents are mythical rather than real.

Genetic contributions to human activities are complex and indirect (see Chapters 41 and 50). Also, it tends to be assumed that if there are qualities that make some people more capable than others and that have an inherited component, these will be closely related to a person's cognitive attributes (such as cleverness or creativity). But according to Howe (1999):

> ... it is just as likely that those – conceivably largely inherited – human qualities that make the larger contributions towards setting geniuses apart from other people are ones of temperament and personality rather than being narrowly intellectual ones ...

Indeed, the qualities that contemporaries of geniuses such as Newton and Mozart most often remarked on were broadly temperamental: doggedness, persistence, capacity for fierce and sustained concentration, and intense curiosity. Several geniuses, including Darwin and



Portrait of Wolfgang Amadeus Mozart, aged 14 (Blanchet)

Einstein, denied having any superior inherent intelligence (see above), but none has ever denied either possessing or relying on a capacity for diligence and healthy curiosity (Howe, 1999).

People fear that geniuses will be diminished if we remove the mystery or magic surrounding them by denying that they're a breed apart. On the contrary:

> ... it is not until we understand that they are made from the same flesh and blood as the rest of us that we start to appreciate just how wonderfully remarkable these men and women really are. They show us what humankind is capable of ... (Howe, 1999).

Howe *et al.* (1998) reviewed the arguments on both sides. They found no evidence of innate attributes operating in the predictable and specific way they felt 'talent' implies, and concluded that differences in early experiences, preferences, opportunities, habits, training and practice are the real determinants of excellence.

One of the challenges to the talent account has focused on musical genius (e.g. Sloboda *et al.*, 1994a, 1994b). For example, top violinists by the time they're 20 have practised more than 10,000 hours in total (and less successful ones only 5000). This began as early as ages four to six for international performers – about four concentrated hours per day.

According to Sloboda (in Aldersey-Williams, 1999):

> Early ability is not evidence of talent unless it emerges in the absence of special opportunity to learn.

Even that prodigy of prodigies, Mozart, had a composer–father who was also famously ambitious for

his son and bullied him towards musical greatness. Demonstrations of exceptional musical skill tend to *follow* rather than precede attempts to encourage it.

Similarly, Ericsson & Charness (1994) note that the winning time of the first Olympic marathon is comparable to the qualifying time achieved by thousands of runners in the modern Boston marathon.

ASK YOURSELF...
- Try to explain these dramatic changes in runners' capacity.

Greater knowledge about running, better nutrition and medical care, better training techniques and so on can adequately explain these changes, without having to bring genetic factors into it. Similarly, differences between world-class athletes (as with violinists) reflect differences in training and practice from an early age – *not* genetic differences.

ASK YOURSELF...
- Howe *et al.* acknowledge that theirs is an *extreme environmentalist* position, which many would reject. Try to identify some counter-arguments.

Howe *et al.* conclude their review by saying that if excelling is a consequence of possessing innate gifts, there's no point trying to nurture them in children without them:

... categorising some children as innately talented is discriminatory. The evidence suggests that such categorisation is unfair and wasteful, preventing young people from pursuing a goal because of the unjustified conviction of teachers or parents that certain children would not benefit from the superior opportunities given to those who are deemed to be talented.

Box 40.1 How should gifted children be educated?

- Generally, schools focus whatever resources they have on the *moderately academically gifted:* bright students with strong but not extraordinary abilities, who don't face the problems of precocity and isolation to the same degree as the profoundly gifted. The moderately gifted comprise the majority of the current 'pull-out' programmes in American schools (i.e. removal from regular classes).
- The use of IQ as a filter for gifted programmes tends to tip them towards the moderately gifted, at the expense of the profoundly but unevenly gifted children. Many of the latter do poorly on IQ tests, because their talent lies in either maths or language – but not both. Those whose talent is musical, artistic, or athletic are also regularly omitted.
- It makes more sense to identify the gifted by examining past achievements in specific areas, rather than relying on 'plain-vanilla IQ tests' (Winner, 1998). Schools should then place the profoundly gifted in advanced courses only in their areas of giftedness – other subjects can continue to be taught in regular classes.
- Many gifted children are so bored by school that they become disengaged, even dropping out, often because their school districts don't allow grade acceleration or have no special programmes. According to Bee (2000):

  Given ... that grade skipping does not seem to be linked to social maladjustment (and is linked to better achievement among the gifted), it seems to make good sense to encourage accelerated schooling, if only to ward off terminal boredom for the gifted child.

- In England and Wales, Ofsted (the Schools Inspectorate) has highlighted the fact that often the most able pupils in a school aren't receiving a satisfactory education (Alcott, 2002) – their special needs aren't being met. As a result, many gifted and exceptional children may become bored, leading to disruptive behaviour. Schools are now addressing this 'deviant' end of special educational needs (SENs). For example, a useful recent distinction has been made between 'gifted' (those with high levels of ability in many subjects and activities) and 'talented' children (those who excel in only one area). Once identified, both groups are either:

  1. *aggregated* (all the gifted are put together and all the talented together)
  2. *accelerated* (moved up a whole year or two years – 'grade-skipping'), or
  3. *enriched* (given a special educational programme) – an individual learning account is drawn up, usually in response to a *statement of SENs* agreed with the local educational authority; this provides individual children with the most appropriate form of education, which is exactly the same principle as for children with learning difficulties (see text below). But the reality of what's offered may fall short of these sound educational principles (Curtis, 2003).

AUTISM

Definition and classification

Autism was first identified by Kanner in the USA (1943) and Asperger in Austria (1944), quite independently of each other. Kanner used the term 'early infantile autism' ('autos' is Greek for 'self') to describe individuals who had an 'aloneness', which involved the ignoring and shutting out of the world and living in an isolated, essentially asocial state. They were limited in language and obsessive about the need for sameness in particular aspects of their environment. Kanner speculated (incorrectly) that they

fall within the average range of intelligence, and that any poor learning performance resulted from their difficulties with the social aspects of learning.

Asperger worked with an older age-group, but his observations overlapped with Kanner's. He also used the term 'autistic', and there's an ongoing debate as to whether autism and what's now called Asperger's syndrome are distinct disorders, expressions of the same disorder, or both part of an *autistic spectrum* (with those displaying Asperger's constituting a high-IQ subgroup). According to Powell (1999), they aren't mutually exclusive – Asperger's individuals have a particular form of autism (see Box 40.2).

Later, ritualistic and compulsive dimensions were identified as crucial, resulting in the *triad of impairments* (social relationships/behaviour, language/communication, and stereotyped/repetitive behaviour: Wing, 1976). Also, Wing & Gould (1979) found that learning disabilities (LDs) (IQ below 70) were clearly associated with the triad (see Table 40.1, page 697). Ninety per cent of those having 'full', typical autism had an IQ between 20 and 69.

Box 40.2 Autism Spectrum (AS)

- As a result of Wing & Gould's (1979) findings, it became clear that there's a wide spectrum of autistic disorders, of which 'Kanner's autism' is only a part.
- They estimated that 20 children per 10,000 have AS disorders and mental retardation (learning disabilities), a figure that was revised by Wing (1997) to nine per 1000. Does this reflect changes in diagnostic criteria or an increasing prevalence (Powell, 1999)?
- According to Scott (2004), the triad of impairments can be manifested in a wide variety of ways, such that no children with autism are alike – in fact, they can be extremely different. The most widely used manuals of psychiatric classification of disorders (ICD-10 and DSM-IV-TR: see Box 40.3) currently include *autism, atypical autism, Asperger's Syndrome* and *Pervasive Developmental Disorder – Not Otherwise Specified* (PPD-Nos), and others, as part of the AS. It's not clear whether all these disorders are related by underlying cause or only by similar symptoms ('outward appearance') (Scott, 2004).

Incidence and diagnosis

According to Mitchell (1997), the incidence of autism is one to two per 1000 live births, with boys outnumbering girls by four or five to one, at least for those with Asperger's. In the more seriously affected, boys still outnumber girls by two to one. Recent research conducted at the Autism Research Centre, University of Cambridge, shows that 6 per cent of siblings of children with autism will also have problems with all three kinds of impairment, 10–12 per cent will have problems with two or three areas, and a further 20 per cent in one area. If one identical (monozygotic/MZ) twin has autism, there's a 60 per cent chance the other twin will have problems in all three symptom areas, an 80 per cent chance of problems in any two areas, and a 90 per cent chance of problems in any one area. For non-identical (dizygotic/DZ) twins, the figures are the same as for ordinary siblings (Scott, 2004). These percentages are referred to as *concordance rates.*

ASK YOURSELF...

- What do these figures suggest regarding the *causes* of autism? (See Box 40.2.)
- What do they tell us about the autism spectrum?

Box 40.3 Criteria for diagnosing autism (based on DSM-IV-TR)

- **Qualitative impairments in social interaction:** impaired non-verbal behaviours (especially eye contact), failure to engage in genuinely social games (such as turn-taking), no attempt to share interests through *joint-attentional behaviours*, and a failure to develop any friendship beyond the most superficial acquaintance. A lack of empathy is often seen as the central feature of the social deficit (Baron-Cohen, 1988; Kanner, 1943).
- **Qualitative impairments in communication:** failure to develop language and communication in the normal way (such as delayed and restricted language development, stereotyped and repetitive or idiosyncratic use of language), and failure to use gesture properly. Also, a lack of varied, spontaneous make-believe/symbolic play (Leslie, 1987), and engaging in play which is often lacking in creativity and imagination (Baron-Cohen, 1987).
- **Repetitive and stereotyped patterns of behaviour:** an inflexible adherence to specific routines, becoming distressed if prevented from performing repetitive rituals, stereotyped and repetitive motor mannerisms, and persistent preoccupation with parts of objects.

Autism is typically very difficult to diagnose before about age three. Many 'normal' children are slow to develop in their communication, for example, and complex social behaviours are hard to interpret before the child becomes capable of two-way social interactions (Scott, 2004). The CHAT (Checklist for Autism in Toddlers) has been developed by Baron-Cohen and his colleagues as a screening tool for autism at 18 months. It's designed to be used by GPs or health visitors, and involves a short series of parent questions and interviewer observations of the child. So far, the CHAT has been shown to have a 91.7 per cent success rate at identifying cases of autism spectrum disorder at 18 months. The results suggest that absence of pretend play and joint-attention might be the clearest indicators of risk for autism (Scott, 2004).

According to Lewis (2003), most children diagnosed as autistic have LDs, with over half having IQs below 50. Typically, verbal ability is more seriously affected than non-verbal. Consequently, it's important to show that the characteristic behaviours are found across the ability range – otherwise there'd be a risk of confounding autism with LD. For this reason, much research has focused on relatively able autistic children, who are often compared with children with LDs but not autism (such as Down's syndrome children).

Autism and Down's syndrome

Mitchell (1997) identifies some important similarities and differences between autism and *Down's syndrome.*

- Both conditions are present from birth. But whereas Down's is usually evident from the baby's facial appearance (and will often have been detected prenatally, especially with older mothers), autistic babies look perfectly normal and the diagnosis isn't made until the child is aged four or over. If the diagnosis is made later, this doesn't mean they've 'acquired' it at an older age. Rather, a new label has been applied to existing behaviour patterns.

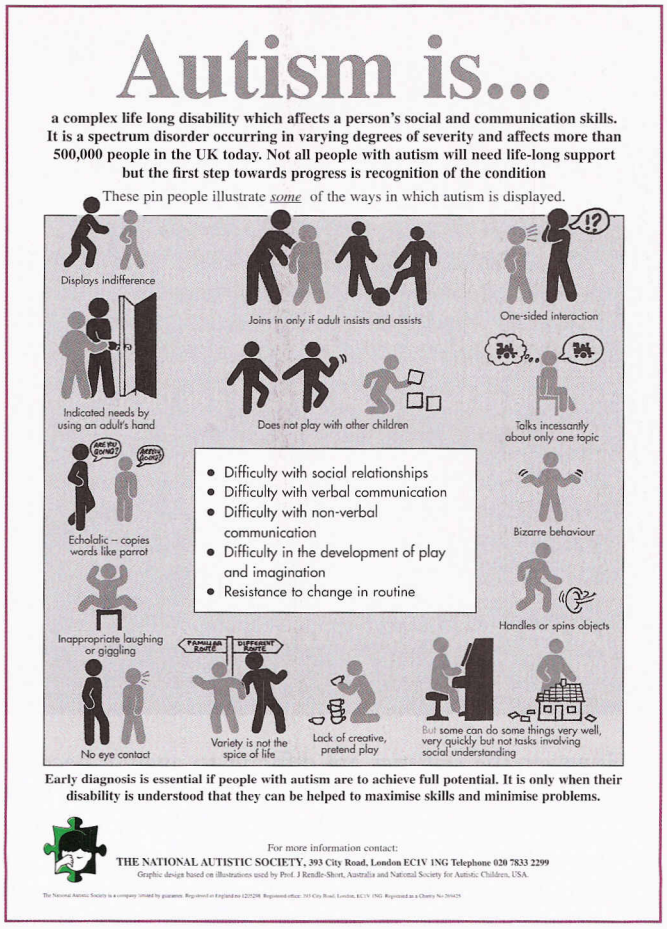


Figure 40.1 From a National Autistic Society leaflet
(Reproduced by permission of the National Autistic Society)



The self-absorption displayed by this autistic girl prevents her from developing a normal 'theory of mind'

- Down's is classified as a chromosome abnormality (the child inherits an extra 21st chromosome) and is the most commonly occurring such abnormality (see Chapter 36). Diagnosis is based on the detection of this extra chromosome, while autism is diagnosed on the basis of characteristic behaviours (see Box 40.3). Relatively little is known about its physiological basis (see Box 40.6, page 695).
- Neither condition can be 'cured', although adaptation and development can and do occur. For example, 50 years ago life expectancy among people with Down's was considerably lower than that of the general population. But the gap has narrowed significantly, mainly because of antibiotics and general improvements in diet, care, and living conditions (Moddia, 1996).



A child with Down's syndrome

- LDs are characteristic of Down's and common in autism (see above). But some autistic individuals have normal IQs, and some (5–30 per cent) may have above-average IQs. With increasing IQ, autism becomes more difficult to diagnose – and may escape diagnosis altogether.
- As we saw when discussing giftedness, many autistic individuals display outstanding musical or artistic abilities (savants). This doesn't occur in individuals with Down's syndrome.

Interestingly, recent research has suggested that about 7 per cent of children with Down's syndrome also have some level of autistic disorder (Kent *et al.*, 1999).

Theories of autism

According to Smith *et al.* (1998):

> The challenge for any researcher investigating autism is trying to explain how one syndrome can lead to the specific combination of impairments which typify a person with autism (lack of socialisation, communication and imagination); how different people with autism can be affected in markedly different ways; and how it is that people with autism can sometimes have better than average abilities in one or two areas (the 'islets of ability').

'Refrigerator parenting' hypothesis

Kanner had originally suggested that autism was partly the result of 'cold', unemotional parenting, specifically by the mother. However, the prevailing current view is that parents' behaviour doesn't initiate or in any way provoke autism. Indeed, any difference in parents' behaviour towards their autistic child is more likely to be caused *by* the autism than vice versa (Powell, 1999).

Also, autism seems to strike indiscriminately. It's no respecter of social class or family environment: it can affect a child with extremely warm and loving parents and where there are no autistic siblings (Mitchell, 1997).

Genetic theories

Kanner originally suggested that autism has a genetic component. According to Rutter *et al.* (1999), findings from several independent studies provide compelling evidence for a strong genetic component underlying autism.

- As we saw earlier, the rate of autism (involving all three problem areas) in siblings of children with autism is 6 per cent. This is many times the rate in the general population (ranging from 1 to 16 per 10,000). Rutter *et al.* maintain that:

  > Whatever the precise figure, it is clear that there is a very substantial degree of familial clustering of autism. Although this could reflect shared environmental factors, a loading as high as this points to the likelihood of a genetic component.

- We also saw earlier that the concordance rate for MZ twins is far higher than for DZ twins. In other words, if one member of a twin pair is autistic, the probability that the other will also be autistic depends to a significant degree on whether they share all their genes (MZs) or only half their genes (DZs: the same as ordinary siblings). Rutter *et al.* believe that several different genes are involved, working in combination: the twin data indicate that autism is the most strongly genetically influenced of all *multifactorial* child psychiatric disorders.

Box 40.4 Where might autistic genes be found?

- Not only have there been reports of an association between autism and anomalies on almost all *autosomal chromosomes* (the non-sex chromosomes), but these are usually based on individual cases. This makes the validity and meaning of the association highly dubious.
- More encouraging is the finding that the portion of chromosome 15 that seems to be implicated in autism is also where the genes for Prader-Willi and Angelman syndromes are located.
- Probably most interest has focused on claims of a strong association between *fragile X syndrome* and autism. Boys have only one X chromosome, so, unlike girls, any defects on it aren't 'cancelled out' by normal genes on the other. Defective genes carried on the X chromosome are the second most common genetic cause of LDs (after Down's syndrome). Affected individuals tend to have prominent jaws and large ears.
- The original claim was that fragile X occurred in at least 16 per cent of autistic individuals, although the accurate figure is almost certainly below 5 per cent. Given the strong male preponderance in autism, it's reasonable to consider that one of the genes that predisposes individuals to autism might be located on the X chromosome.
- Although the International Molecular Genetic Study of Autism Consortium (1998) failed to find any supporting evidence, it did find evidence suggesting the roles of chromosomes 7 and 10, something which hasn't been previously reported.

(Based on Lauritsen *et al.*, 1999; Mitchell, 1997; Rutter *et al.*, 1999)

- However, the statistics are difficult to analyse because autism is still rare, as are MZs, and so the prospects of finding autism in a member of an MZ pair is very remote. Hence, adding just one MZ pair either with or without concordance can radically shift the overall concordance rate (Mitchell, 1997). If autism isn't caused solely by genetic factors, then there must be an environmental component. For example, Piven &

Folstein (1994) found that about 30 per cent of parents with an autistic child show at least some autistic mannerisms, such as deficient turn-taking in conversation, misinterpreting or not noticing implied meanings of their conversational partner's utterances. Parents of Down's syndrome children, as controls, showed no such difficulties.

ASK YOURSELF...
- Why was it necessary to have a control group at all?
- Why do parents of Down's children make a suitable control group?

Theory of mind (ToM) and mind-blindness

The most influential theory of autism in recent years maintains that what all autistic people have in common (the core deficit) is *mind-blindness* (Baron-Cohen, 1990), a severe impairment in their understanding of mental states and in their appreciation of how mental states govern behaviour (e.g. Baron-Cohen, 1993, 1995a, 1995b). They lack a '*theory of mind*' (ToM), a term originally coined by Premack & Woodruff (1978) based on their work with chimps (see Gross, 2003a).

When the ability to 'read minds' is in any way impaired, enormous difficulties arise. Autistic individuals fail to develop the ability to attribute mental states to other people, and this has fundamental implications for communication, where making sense of others' intentions enables the listener to understand what's being said (Baron-Cohen, 1995a).

ASK YOURSELF...
- Try to think of examples of 'mind-reading', either from real-life interactions with others, or from TV programmes, films or literature.
- How vital is it that we take into account the fact that not everyone has access to the same information about a situation?

Testing the ToM hypothesis

Wimmer & Perner (1983) devised a *false belief task,* with four-, six- and eight-year-olds, involving two small dolls (Maxi and his mother). The dolls enact a story in which the mother moves Maxi's chocolate from a green drawer (put there by Maxi) to a blue drawer (while Maxi's outside playing). Children are asked *where Maxi would look for the chocolate* when he returned. A *correct answer* ('green drawer') involves attributing to Maxi a *false belief:* the children *know* the chocolate's in the blue drawer, but they also know that Maxi doesn't have this knowledge (so he thinks it's still in the green drawer). An *incorrect answer* ('blue drawer') indicates that children cannot distinguish between what they themselves know and what Maxi knows. A correct answer reflects a ToM.

KEY STUDY 40.2 Has Sally lost her marbles? (Baron-Cohen *et al.*, 1985)

- This was a replication of the Wimmer and Perner 'Maxi' study, retaining the vital elements but adapted to make it shorter and simpler and more appropriate in content for older children (Mitchell, 1997).
- Sally and Anne replace Maxi and his mother, and the story involves transfer of a marble from a basket to a box.
- A crucial difference between Baron-Cohen *et al.*'s and the Wimmer and Perner study is that the latter involved only normal children. Baron-Cohen *et al.* tested:
  (a) 20 autistic children, chronological age (CA) 6–16 (mean 11.11), mean verbal mental age (vMA) 5.5
  (b) 14 Down's syndrome children, CA 6–17 (mean 10.11), mean vMA 2.11
  (c) 27 normal children, CA 3–5 (mean 4.5), assumed to have vMAs equivalent to their CAs.

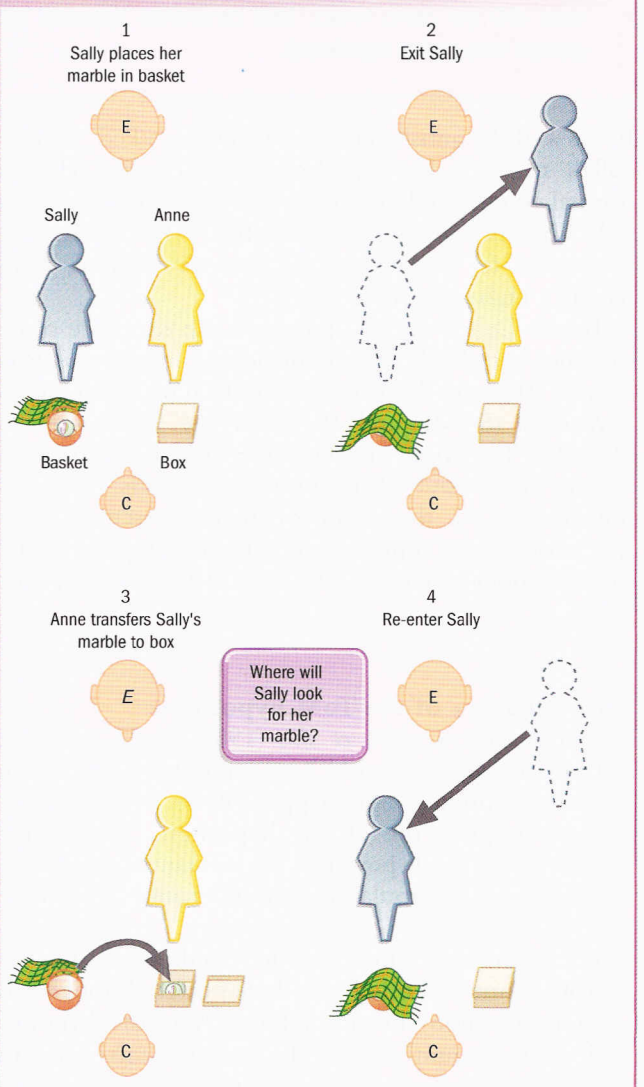


Figure 40.2 The experimental scenario used in Baron-Cohen *et al.*'s (1985) study

ASK YOURSELF...
- Why were these two other groups used?

- The *dependent variable* was success or failure on the Sally–Anne test, specifically, on the question: 'Where will Sally look for her marble?' (*belief question*).

ASK YOURSELF...
- Assuming that autistic children don't possess a ToM, while normal children and those with Down's syndrome do, how would they have answered the question?

- The results for Down's syndrome and normal children were strikingly similar: 23 out of 27 normal children, and 12 out of 14 Down's syndrome children passed the belief question. By contrast, 16 of the 20 autistic children (80 per cent) failed. This difference between the groups was highly significant.

It was as if the autistic children had been asked: 'Where is Sally's marble?' They performed much like clinically normal young children do (i.e. below 4), but their average CA was just below 12 (Mitchell, 1997). They also performed far worse than the Down's children, despite having a higher mean verbal MA.

Baron-Cohen (1995a) proposed the existence of four modules involved in 'mindreading': the *intentionality detector* (ID), *eye-direction detector* (EDD), *shared-attention mechanism* (SAM), and the *theory of mind mechanism* (ToMM). ToMM is innately determined and begins to mature from about 12–18 months to 4 years. It processes information in the form of metarepresentations: it's specialised for representing mental representations ('beliefs about beliefs') (Leslie, 1987, 1994; Leslie & Roth, 1993).

An evaluation of the ToM hypothesis

- Since Baron-Cohen *et al.*'s (1985) study, researchers from all over the world have replicated and extended the basic findings (see Happé, 1994a).
- But despite the ToM hypothesis being both convincing and powerful, a substantial amount of evidence is accumulating that undermines it (Mitchell, 1997).
- For example, some autistic children *do* pass the Sally–Anne and other false-belief tasks, although often later than non-autistic children. Also, the hypothesis doesn't account for *all* the impairments/difficulties associated with autism, such as a restricted range of interest, the obsessive need for sameness and preoccupation with parts rather than the whole (the trees rather than the wood).
- Equally, it fails to address some of the apparent strengths of at least some autistic individuals, such as their excellent rote memory and the exceptional abilities (the 'islets of ability'), as demonstrated by Stephen Wiltshire and other savants (Frith, 1996; Mitchell, 1997; Powell, 1999: see above).

CRITICAL DISCUSSION 40.1 Do people with autism have extreme male brains?

- The limitations of the ToM hypothesis may be at least partially remedied by Baron-Cohen's (2003) *empathising–systemising (E-S) theory*.
- According to Baron-Cohen, people with autism may have an extreme form of the male brain – good at systemising, very bad at empathising.
- The obsessional interests that people with autism spectrum conditions show often focus on a *system*. This may be an intense preoccupation with light switches, or running water from the taps in different sinks. According to E-S theory, the child may simply be focusing on tiny details in the system (for example, how fast the water flows when the tap is turned to different angles) – that is, using their intelligence to work out the *underlying rules* that govern it.
- Typically, they home in on a topic or area of knowledge, and comb it for every detail until they feel they've covered most, if not all, the available information. The 'obsession' can last weeks, months or even years. They then move on to a new area to master. This *systemising* represents a *learning style* that prefers depth to breadth, and accuracy or exactness over gist.
- What's likely to leave them disabled is their *impaired empathising*. This is related to their *mind-blindness*.
- Empathising is controlled by the *left hemisphere* of the brain, and is generally superior in females. Systemising is controlled by the *right hemisphere*, and is generally superior in males. According to E-S theory, people with autism, whether male or female, have an extreme male brain: it's predominantly 'right-sided'.

- Other attempts to correct some of the limitations of the ToM hypothesis include (a) *weak central coherence* and (b) *impaired executive functioning*.

Weak central coherence

Frith (1989; Frith & Happé, 1994a, b) proposed that the deficits and strengths stem from the same cognitive source involving how information is integrated. Specifically, they claimed that autism is at least partly the result of a '*weak drive for central coherence*'.

Box 40.5 Central coherence

- While we normally process information at a *global* (*holistic* or 'top-down') level, autistic individuals tend to do this at a *local* (*segmental* or 'bottom-up') level.

- This corresponds to 'the whole' and 'the parts' respectively (see Chapter 15). The former allows us to *disambiguate* ambiguous words (homographs) within the context of a sentence, something which autistic children couldn't do even if they did succeed at ToM tasks (Frith & Snowling, 1983; Happé, 1994b).
- These same children also tend to have difficulties in real-life situations where ToM is required, since they cannot extract information from its context:

Knowing the theory of how other minds work is simply not enough if that knowledge does not take account of context and in the social world context is all important, ever-changing and often implicit ... (Powell, 1999)

Weak central coherence may help to explain at least some of the exceptional abilities shown by savants, where attention to detail is paramount. For example, Stephen Wiltshire's drawings seem to be built up from detail to the whole (not vice versa: Powell, 1999). However, this interpretation *wouldn't* apply to the artist Richard described by Hermelin *et al.* (1999: see Case Study 40.2, page 686).

The tendency to process at a local level will benefit when tasks require an analytical approach, and where global processing can be distracting (as in finding embedded figures: Shah & Frith, 1983). This may also account for the everyday observation that autistic individuals may locate fine detail or identify slight changes to familiar objects or layouts that go unnoticed by others (Powell, 1999). However, this style of thinking may not be unique to people with autism.

Impaired executive functioning

Executive functions refer to the ability to 'maintain an appropriate problem-solving set for the attainment of a future goal' (Ozonoff *et al.*, 1991) and include planning, impulse control, and working memory (WM: see Chapter 17). Autistic individuals may become distressed by changes in their immediate environment which interfere with their ritualised behaviours, they don't plan ahead well, and they often seem unable to anticipate the consequences of their actions.

Box 40.6 Executive functioning and the brain

- Executive functioning is believed to depend on intact *frontal lobes* (see Chapter 4). There's increasing evidence for poor performance on many 'frontal' tasks in autism (Frith, 1996).
- Rigidity and *perseveration* (ritualistic repetition of certain behaviours) are found both in patients with frontal lobe damage and individuals with autism, implying that autism may involve frontal lobe impairments. But patients with frontal lobe damage are strikingly *not* autistic (Frith, 1996).
- One possible explanation for these apparently inconsistent findings is that brain damage from birth and in later life produce very different behavioural pictures – even if the same brain area is involved. The later damage would be expected to have more *specific* consequences.

So, although an executive function deficit *alone* cannot account for the specific nature of autism (Lewis, 2003), it can potentially explain several features not tackled by ToM (Frith, 1996). Frith concludes by saying:

It seems unlikely that one single cognitive abnormality can be identified that would explain all the abnormalities present in autism. The existence of multiple deficits ... might help us understand why autism can exist in many different forms ranging from mild to severe. The explanation of autism at the cognitive level needs to be complemented by the explanation at the biological level ...

Treating autism

- *Biological approaches* include the use of the neuroleptic drug *haloperidol* and serotonin-reducing drugs such as *fenfluramine*. However, results have been disappointing and as with all powerful *psychoactive drugs*, are associated with side-effects (see Chapter 45).
- Other biological approaches derive from the observation that certain allergies produce behaviours similar to those seen in autism, such as headbanging and screaming. Consequently, *orthomolecular therapy*, in which autistic children are placed on low-carbohydrate diets, and megavitamin therapy, in which large daily doses of vitamin B6 are given, have been tried.
- *Behavioural approaches* include *behaviour modification*, which has been used to eliminate some aspects of autism such as self-mutilative behaviour. These behaviours, as with screaming, aren't unique to autism, and are actually more common in those with severe LDs. Typically, these approaches use *positive reinforcement* or *extinction*, although these can be time-consuming (Harris *et al.*, 1991).

For example, Simmons & Lovaas (1969) found that it took 1800 head bangs over an eight-day period before that behaviour was extinguished – by the withdrawal of social attention. Controversially, *punishment* (in the form of electric shock) has been used with autistic children, mainly for removing self-harming behaviour, and appears to be highly effective. As Lovaas (1977) states:

Seemingly independently of how badly the child is mutilating himself or how long he has been doing so, we can essentially remove the self-destructive behaviour within the first minute.

ASK YOURSELF...

- Try to formulate some arguments for and against the use of electric shock for self-mutilative behaviour in autistic (or other) children and adults.

Autistic children are clearly not transformed into 'normal' children by behavioural methods, and the behavioural changes that may be achieved in the therapeutic setting may not generalise to other settings. However, they may provide autistic children with enough adaptive behaviours to cope more effectively with the world. Perhaps even more importantly, such methods may make the children more socially acceptable and more 'rewarding' for other people. This, in turn, will provide the children themselves with more rewarding experiences and exchanges with others.

- *Cognitively based approaches* involve *structural therapy,* in which the environment is arranged so that the child will receive spontaneous physical and verbal stimulation in the form of play and games. By increasing the amount of stimulation, the therapy aims to make them more aware of themselves and their environment, and relate more to it.
- Other approaches aim to include the parents of autistic children in the treatment programmes (which recognises their role as potential agents of change), and teaching children sign language. This takes advantage of their sensitivity to touch and movement, and gets round the quite common problem of their failure to respond to spoken language (Webster *et al.*, 1973). Music may represent an alternative form of communication – and self-expression – as illustrated by the case of Hikari Kenzaburo (see Case Study 40.3, page 686).
- Current research is looking at developing new interventions in particular areas. One such study has been trying to teach ToM to children with autism.

KEY STUDY 40.3 Teaching ToM (Scott, 2004)

- One attempt to teach ToM uses a *metaphor* that autistic children can comprehend, because it works on the principles of a physical sequence of events and utilises equipment they understand (cameras and photographs).
- The children are given a false-belief task, but instead of using normal dolls or cartoons, they're trained using a plastic doll's head, 'John', which has a slit in the top. Photographs of the events can be posted into the slit.
- A photo is taken of John's 'thoughts' (e.g. the location of something he really likes, such as chocolate), the child posts it into his head, the item John likes is moved, and the child is asked 'Where will John look for his (chocolate)? Where does he think it is?'
- The children succeeded on the tasks with this training: they realised that 'John's' behaviour is driven by his thoughts, and not by reality (where the chocolate *actually* is). But they couldn't always generalise to new situations, and, of course, in real life we don't always know what someone else is thinking. However, this kind of methodology provides a starting point for training ToM and could help reduce the social problems experienced by people with autism (Scott, 2004).

LEARNING DIFFICULTIES (LDS)

LDs and learning disabilities, and mental impairment

'Learning difficulty' is defined by the Education Act 1993 as:

> A condition that exists if a child has significantly greater difficulty in learning than the majority of children of his age, or a disability which either prevents or hinders him from making use of educational facilities of a kind generally provided for children of his age in schools within the area of the local education authority.

While the term 'learning disability' isn't used in any relevant legislation (Lyon, 1995), it's the generally accepted term in service provision in the UK (e.g. by social workers). But education authorities, and the Code of Practice for Special Educational Needs, use the legally defined term 'learning difficulties' to refer to preschool and school-age children who, as adults, would be identified as having 'learning disabilities' (Dockrell *et al.*, 1999).

LDs (children)/learning disabilities (adults) cover what have variously been called 'mental handicap', 'mental subnormality' and 'mental retardation'. The last term is still commonly used in the USA, is used by the two major systems for classifying mental disorders, DSM-IV-TR (2000) and ICD-10 (1992: see Chapter 43), and is the internationally used term (Carpenter, 1997; Gelder *et al.*, 1999).

Another legally defined term is 'mental impairment'. According to the Mental Health Act (1983), mental impairment is:

> A state of arrested or incomplete development of mind which includes significant impairment of intelligence and social functioning.

Diagnosing LDs

People diagnosed with LDs don't all experience the same type or degree of problem. They come from all social-class and ethnic backgrounds, but black people with LDs experience two sorts of oppression at the same time (see Chapter 25). Assessment measures may be biased, either in terms of the materials used or the assessment situation itself. Many standard test procedures and equipment are based on white, middle-class values and experiences, producing an underestimation of an individual's level of competence (Chaudhury, 1988).

IQ is still the main criterion used to diagnose LDs. However, the extent of impairment in children's ability to adapt to the demands of society is crucial for considering the likelihood of their successful integration into mainstream school (Dockrell *et al.*, 1999). Also, a diagnosis of LD (or mental retardation) is made only if the individual is under 18 (Carpenter, 1997). A distinction is commonly made between LDs which have known *organic* (genetic or

brain-related) causes, and those which don't, and this distinction is associated with different degrees of difficulty (see Table 40.1).

Prevalence (the proportion of the whole population affected) has changed little since the 1930s, because people with LDs are living longer. However, the incidence (the number of *new* cases) of *severe* mental retardation has fallen by one-third. Half of that fall is attributable to improved antenatal and neonatal care (Gelder *et al.*, 1999).

Table 40.1 Different categories of mental retardation

Name	IQ range	Prevalence (proportion of the whole population which is retarded)	Description
Mild	50–70	3% (80% of all cases)	Adults can be expected to acquire some independence in most self-care/domestic activities, and earn money from unskilled work. Main difficulties will be in reading, writing, monetary skills, emotional and social immaturity, and inability to adapt readily to social expectations and external stressors.
Moderate	36–49	0.3% (12% of all cases)	Adults frequently have additional disabilities, such as epilepsy, and physical and sensory disabilities. Most need supervision with self-care.
Severe	20–35	0.04% (7% of all cases)	As above.
Profound	Below 20	0.05% (1% of all cases)	Adults usually need close supervision and care their whole life. Many can feed themselves with a spoon, most can understand and make simple statements and requests. Most have multiple disabilities.

(Based on Carpenter, 1997; Gelder *et al.*, 1999)

The causes of LDs

According to Carpenter (1997):

> ... because of the multiple stages in producing 'disability', it is usually a gross simplification to speak of one cause for the aetiology of a person's learning difficulty. Similarly, it is very difficult to predict accurately the degree of learning difficulty that will be produced by a specific organic cause.

People with *mild* LDs don't usually have clear aetiological diagnoses, that is, there's seldom an obvious, single cause. Most have family histories of low IQ, but it's unclear if this reflects a genetic influence, the effects of the environment, or the effects of undocumented specific causes. For example, it was traditionally assumed that mild LDs were caused by genetic and sociocultural factors. The discovery of *fragile X syndrome* (see Box 40.4, pages 692–693) and *foetal alcohol syndrome* (FAS: see Box 40.7) has suggested that (other) more specific causes will be discovered in time. However, it's rare for a child from a high socio-economic background to have either mild or severe LDs without some medical cause being apparent (Carpenter, 1997).

As Dockrell *et al.* (1999) say:

> The mild level of learning difficulty is viewed primarily as an academic dysfunction, or as a deficiency in learning ability with aetiology unknown, while severe learning difficulty (IQ below 50) is often viewed as physiologically caused handicap.

People with *severe or profound* LDs are more likely to have an identifiable *primary* cause, usually genetic. The most common known autosomal chromosomal abnormality responsible for intellectual impairment is Down's syndrome (see above). This occurs in one-third of people with an IQ below 50 (Carpenter, 1997). The most common well-documented single-gene recessive defect is *phenylketonuria* (PKU), which affects 12 in 1,000,000 people. This is routinely tested for at birth in the UK, and a special diet can prevent LDs from developing. But an appreciable minority still isn't put on the special diet within three weeks of birth (Carpenter, 1997).

Secondary causes include the following.

- *Hypothyroidism:* in its severe form, this used to be called 'cretinism'. One cause is cerebral palsy (see below), but early detection and administering thyroxine within the first three months of life will prevent intellectual impairments. But many affected children will also be deaf, which can impair intellectual development.
- *Cerebral palsy:* this can be *congenital* (present at birth), as in congenital *rubella* (German measles) but may also result from postnatal events. About one-third of full-term infants with cerebral palsy have severe LDs, and it's much more common in low-birthweight (premature) babies (but only 20 per cent of the latter have severe LDs).
- *Neural tube abnormalities: spina bifida* is one example, affecting 70–150 per 100,000 live births. Up to 10 per cent will have LDs, and almost all of these will be multiply handicapped.
- *Foetal alcohol syndrome* (FAS).

Box 40.7 Foetal alcohol syndrome (FAS)

- Children with FAS (first identified by Jones *et al.*, 1973) are typically smaller than normal and suffer from *microcephaly* (unusually small heads and brains).
- Such children often have heart defects, short noses and low nasal bridges. The eyes, too, have a distinctive appearance.
- FAS children are generally mildly retarded, though some may be moderately retarded and others of average intelligence. But in those of average intelligence, there are significant academic and attentional difficulties (Sue *et al.*, 1994).
- The syndrome is a consequence of the mother's excessive alcohol consumption during pregnancy. While there doesn't seem to be an agreed 'safe' level of maternal drinking during pregnancy, there appears to be a linear relationship between the amount of alcohol consumed and the risk of FAS. Binge drinking may be as dangerous as regular drinking.



A child with FAS

Specific learning difficulties: dyslexia

What is dyslexia?

ASK YOURSELF...

- What do you understand by the term?
- How do you think the term is commonly understood?

The terms 'specific learning difficulty' and *dyslexia* (literally 'non-reading') are often used interchangeably. People with dyslexia are of average intelligence, and have no visual or auditory impairments. *Acquired dyslexia* occurs in previously literate people following brain injury, while *developmental dyslexia* occurs in children as they get older. Most psychological theory and research are concerned with the latter.

Dyslexia (or 'congenital word blindness') became categorised as a LD in the 1981 Education Act, but it was first described in 1896 (in the *British Medical Journal:* Snowling, 1998). The case described 14-year-old Percy, who displayed many common characteristics, including:

- *dysphonetic spelling errors* (e.g. 'carefully' becomes 'calfuly')
- *substitutions of phonemes* (e.g. 'peg' becomes 'pag')
- *transpositions of letters* (e.g. 'Percy' becomes 'Precy').

Percy seemed to have *phonological dyslexia,* which affects letter–sound conversion. The individual cannot convert written words to their sounds directly or pronounce written words s/he hasn't seen before. For example, if asked to pick two words which rhyme from a list of 'rite', 'rit', and 'knight', the individual is more likely to select the first two – because they're *visually similar.*

Surface dyslexia affects whole word recognition. So, the individual can recognise a word only by sounding it out, rather than reading it by sight. Words which break standard pronunciation rules, such as 'broad', cannot be read correctly, and their pronunciation may be regularised ('brode'). *Deep dyslexia* affects reading for meaning. The individual is unable to pronounce aloud non-words, has difficulty with function words (sometimes substituting one for another), and often responds to real words with words of similar meaning (Coltheart *et al.*, 1983).

Diagnosing dyslexia

Children with dyslexia are usually contrasted with those who have reading difficulties in the context of more general learning problems (*reading backwardness*) (Rutter & Yule, 1975; Silva *et al.*, 1985). Many children are poor readers, but their underachievement can usually be attributed to below-average ability, emotional/behavioural disorders (such as attention-deficit hyperactivity disorder/ADHD), or environmental factors (such as school absence or sociocultural deprivation). Conversely, the reading and writing attainments of children with dyslexia are significantly below the level predicted based on their levels of general intelligence – despite normal functioning and adequate educational opportunity (Egan, 1998). Diagnosis of dyslexia is based on this discrepancy between expected and actual reading attainment (Snowling, 1998).

The incidence of dyslexia

Dyslexia has been reported in most countries with universal education, and in both European and non-European languages. It's often familial and occurs in all ability ranges and social-class groups. Allowing for differences in diagnostic criteria, it's estimated that about 4 per cent of school-age children are dyslexic (Egan, 1998). Snowling (1998) puts the figure at between 4 and 7 per cent. Early studies typically reported an excess of boys (four to one), but more recently the reported ratios have been much closer (Snowling, 1998).

Explaining dyslexia

According to Egan (1998), since reading isn't a 'natural' skill (unlike speech), it's unlikely to have its own specialised brain area controlling it. Models of word-recognition suggest that reading involves two letter–brain routes: visual and phonemic (see Chapter 19).

Visual perceptual deficits

The visual route is used to match letter sequences to particular words stored in memory. Some fairly common visual errors include:

- reading words/letters in a back-to-front way (e.g. 'saw'/'was'; 'b'/'d')
- contracting words (e.g. 'tenable'/'table')
- reading sentences in the wrong order (e.g. 'he was going out'/'he was out going').

Dyslexics make these visual errors only on perceptual tasks involving symbolic material (i.e. word-related), and their visual errors are also similar to those made by young children learning to read. These data suggest that dyslexics' visual errors are caused by their reading disability – not vice versa. However, the case of A.S. casts some doubt on this conclusion.

CASE STUDY 40.4 A.S. (Wydell and Butterworth, in Uhlig, 1996)

- A.S. is a 17-year-old boy living in Japan with his English mother and Australian father. His first language is English, which is used exclusively at home. But at age six, he went to a Japanese-speaking school.
- A.S. has no difficulty with Japanese, and can use university textbooks. His English, though, is behind his classmates', and at age 13 it was confirmed that he was dyslexic in English but not in Japanese.
- Japanese has two written forms – *kanji* and *kana*. Kanji symbols have meaning but no phonetic values. If A.S.'s dyslexia were the result of a visual processing problem, he should have more difficulties with kanji than English – but he clearly doesn't.
- He appears to suffer from a form of dyslexia that could be unique to English. The many pronunciation and spelling irregularities in English apparently confuse the method by which A.S. assigns sounds to letters.

Phonological deficits

The phonemic route is used to match letters and combinations of letters with the spoken form of words. Although skilled readers rarely use this route, it's important in learning to read. Young children first learn to associate particular patterns of letters with pictures or spoken words ('whole word' reading), but this doesn't allow them to 'decode' new words. So they need to identify the individual sounds (phonemes) in words and blend them to produce words (e.g. 'k-ah-tuh' ... 'k-ahtuh' ... 'kat' ... 'cat': Egan, 1998).

Dyslexics have extreme difficulty with this process. Words appear to be indivisible and they seem to be 'arrested' at the 'whole word' reading stage (Frith, 1985). For example, when M.B. (a 12-year-old, with an IQ of 116 but a reading age of eight years, two months) was presented with unfamiliar words, he replaced them either with real words that looked like the target (e.g. 'smoulder'/'soldier') or with nonsense words (e.g. 'saucer'/'shaller') (Egan, 1998).

The ability to segment, 'sound out' or blend words are all functions of *phonological awareness:* the ability to reflect on or mentally process the sound structure of spoken words. According to the *core phonological deficit* (CPD) model of dyslexia (Stanovich, 1986; Stanovich & Siegel, 1994), dyslexia essentially involves very limited phonological awareness.

Box 40.8 Dyslexia and the brain

- Some people with developmental dyslexia show atypical asymmetry in the *plenum temporale* (in Wernicke's area: see Chapter 4). This is evidently directly associated with phonological coding deficits. However, these neurological problems are also found in children who are generally poor readers.
- Studies using imaging techniques (such as PET: see Chapter 4) have found reduced activity in the *insula* of dyslexic participants compared with non-dyslexic controls on phonological tasks (but not on visual-processing tasks).
- The insula is located between Wernicke's and Broca's areas, and is known to be involved in the transmission of language. It may play a role in translating between spoken inputs and speech production (Snowling, 1998).

Is dyslexia really a distinct reading difficulty?

Just as some of the brain abnormalities implicated in dyslexia may not be unique to dyslexics, so the underlying phonological deficits also occur in 'plain' poor readers (age-matched controls whose poor reading ages can be accounted for by their lower IQs). In other words, phonological deficits cannot differentiate dyslexics from other poor readers. This and other evidence makes it increasingly difficult to justify studying and treating developmental dyslexia as if it were entirely distinct from the poor reading shown by children disadvantaged by low general intelligence, inadequate home preparation, or poor teaching (Coltheart and Jackson, 1998; Snowling, 1998).

Does dyslexia involve a mainly phonological deficit?

There's also evidence to suggest that the primary cause of reading difficulties in developmental dyslexia has nothing to do with phonology at all. For example, Castles & Coltheart (1993) found that some children's difficulties were *orthographic,* that is, they failed to develop an adequately large *sight vocabulary* (while their ability to map from letters to sounds was normal). This is *surface dyslexia.* Where this second ability is also impaired, the impairment is called *phonological dyslexia.* These represent two distinct patterns of developmental reading difficulty (Coltheart & Jackson, 1998).

Other researchers (e.g. Stein & Fowler, 1985) believe that in at least some children with developmental dyslexia, the central difficulty is *oculomotor,* that is, the reading difficulty is caused by poor control of eye movements.

Some concluding comments about dyslexia

According to Coltheart & Jackson (1998), the *same proximal cause* (some abnormality in the information-processing system the child is using, such as weak phonological awareness) can itself be the product of *different distal causes* (the reason for this system being abnormal, e.g. congenital, environmental, educational). Coltheart and Jackson believe that effective treatment interventions will be defined largely (although not exclusively) by the proximal causes. This approach treats children as individuals, producing individual profiles which are then compared with age-related norms. When such an approach is adopted:

The term 'dyslexia' has no role to play ...

CHAPTER SUMMARY

- **Gifted children** tend to be **precocious**, make discoveries on their own, have an obsessive interest in their domain of giftedness, and have unusually good **metacognitive skills**.
- Cases like those of Sufiah Yusof and Ruth Lawrence illustrate the kinds of social and emotional problems gifted children are prone to.
- Terman's study of giftedness also created the myth that these children are **globally** gifted. In fact, the **unevenness** of gifted children's abilities is quite common and **savants** such as Stephen Wiltshire illustrate the unevenness of abilities in an extreme form.
- Both savants and non-savant gifted children appear to have **atypical brain organisation**. This may account for the '**pathology of superiority**' and may be caused by '**testosterone poisoning**'.
- The belief that giftedness is hardwired in the infant brain is consistent with the '**talent account**'. But critics argue that talents are mythical, that temperamental and personality qualities, rather than cognitive ones, are what set geniuses apart from the rest of us, and that practice from an early age is the crucial environmental influence.
- **Autism** has been defined in terms of the **triad of impairments**: **social relationships**, **language/communication** and **stereotyped/repetitive behaviour**. There's a **wide spectrum of autistic disorders**, which includes **Asperger's syndrome**.
- An early, unsuccessful, attempt to explain autism was the '**refrigerator-parenting**' hypothesis. Many researchers believe that there's compelling evidence for a strong **genetic** component underlying autism, based on studies of siblings of autistic individuals and of identical/non-identical twins.
- The strongest evidence for autistic children's lack of a **theory of mind** (ToM) and **mind-blindness** is their consistent failure on **false belief tasks**. By comparison, Down's syndrome and normal children reliably pass them.
- However, ToM cannot explain all aspects of autism. Two alternative, complementary, cognitive explanations are **weak central coherence** and **impaired executive functioning**.
- Another complementary explanation is Baron-Cohen's **empathising-systemising** (E-S) **theory**, according to which the autistic individual has an **extreme male brain**.
- Autism is treated by **drugs** and other biological approaches, **behaviour modification**, and more cognitively based approaches, such as **structural therapy** and **training on false-belief tasks**.
- **Learning difficulty** (LD) is a legally defined term, synonymous with **learning disability**, and the internationally used term **mental retardation**. **Mental impairment** is another legally defined term that overlaps with learning difficulty.
- LDs are defined primarily in terms of IQ, but the ability to adapt to society's demands (children) and to be self-sufficient (adults) are also taken into account. **Mental retardation** is usually subdivided into **mild**, **moderate**, **severe** and **profound**.
- **Primary** (organic: genetic or brain-related) **causes**, such as **Down's** and **fragile X syndromes**, are usually associated with severe and profound LDs. **Secondary** (non-genetic) **causes** include FAS and sociocultural and other environmental factors.
- **Dyslexia** (or **specific LD**) may be **developmental** or **acquired**, **surface** or **deep**. It's distinguished from reading backwardness, in which low reading attainment is predicted from more general learning problems.
- The most influential account of dyslexia has been the **core phonological deficit** (CPD) **model**, according to which dyslexics have very limited **phonological awareness**.
- However, this deficit (and related brain abnormalities) may not be unique to dyslexia. Also, the core deficit may sometimes be **orthographic** or **oculomotor**. It's important to distinguish between **proximal** and **distal** causes of dyslexia.

Links with other topics/chapters

- Both exceptionally high achievers (such as Sufiah Yusof and Ruth Lawrence) and Down's syndrome children are *statistically abnormal,* but their behaviours and abilities are clearly very different, as are the *valuations* placed on them by society (Chapter 43).
- Metacognition is an important feature of the *information-processing approach* to understanding *cognitive development* (Chapter 34).

- The left-hemisphere hypothesis explanation of savant syndrome rests on the assumption that the two hemispheres really are different in the kinds of abilities they control (*cerebral lateralisation/lateralisation of brain function*). This is by no means uncontroversial (Chapter 4).
- According to Treffert & Wallace (2004), savant syndrome provides a unique window into the brain regarding *general vs multiple forms of intelligence* (Chapter 41), *plasticity, compensation* and *repair* (Chapter 4). The latter are vital in understanding and treating conditions such as Alzheimer's disease (Chapter 39).
- To say that talents cannot be manufactured is another way of claiming that they develop through *maturation* (Chapter 50).
- ICD-10 (International Classification of Diseases, 10th edition, published by the World Health Organization, 1992) and DSM-IV-TR (Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision, published by the American Psychiatric Association, 2000) are the two most widely used systems for *classifying* and *diagnosing* mental disorders (Chapter 43).
- Autism is often described as the most severe of all child psychiatric disorders, because, unlike other disorders, people with autism seem to be virtually cut off from other people ('in a world of their own'). This is why it's sometimes categorised as a *psychosis,* implying that it's unlike anything in the normal range of experience (Baron-Cohen, 1995a) (Chapter 43).
- Twin studies (comparing DZs with MZs, the latter both reared together and reared separately) is one of the major methods for assessing the influence of genetic factors involved in *intelligence differences* (Chapter 41), *schizophrenia and other mental disorders* (Chapter 44), and so is crucial for the *nature–nurture debate* as a whole (Chapter 50).
- Baron-Cohen's E-S theory is relevant to understanding *psychological sex differences* (Chapter 36).
- All the treatment approaches used with autistic individuals are also used with adults with a wide range of mental disorders (Chapter 45).
- Phenylketonuria (PKU) is often discussed in the context of the *nature–nurture debate* to illustrate how genes don't inevitably produce particular behavioural effects (Chapter 50).

SIX

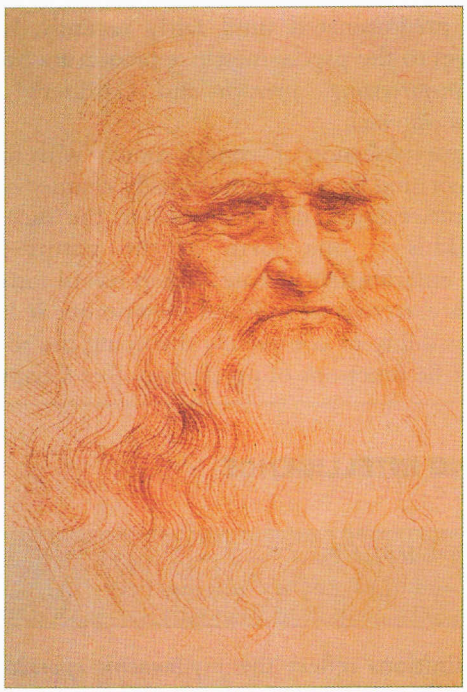
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41

INTELLIGENCE



INTRODUCTION AND OVERVIEW

The concept of intelligence is one of the most elusive in the whole of psychology. Perhaps nowhere else in psychology does so much of the research and theory attempt to define the concept under investigation.

But intelligence isn't just of academic interest. The intelligence test (in one form or another) has impinged on the lives of most of us, whether in the context of educational or occupational selection, or even selection for Mensa, the high-IQ society.

How intelligence is conceptualised varies enormously. *Biological definitions* see intelligence as related to *adaptation to the environment*. For Piaget (1950), intelligence is:

> ... essentially a system of living and acting operations, i.e. a state of balance or equilibrium achieved by the person when he is able to deal adequately with the data before him. But it is not a static state, it is dynamic in that it continually adapts itself to new environmental stimuli.

Piaget is interested in the *qualitative* aspects of intelligence, that is, the nature of intelligence itself.

By contrast, the *psychometric* ('mental measurement') approach is concerned with measuring *individual differences* in intelligence, through the use of intelligence (IQ) tests, and so emphasises the *quantitative* aspects of intelligence. It is this approach, associated with psychologists such as Spearman, Burt, Vernon, Thurstone, and Guilford, that has predominated until fairly recently. Important alternatives to the psychometric approach are Sternberg's *information-processing approach* and Gardner's *theory of multiple intelligences*.

The near-obsession of western society with measuring and categorising people is emotionally charged and politically sensitive, especially in relation to the 'race and IQ' debate. This is one form of the nature–nurture/heredity–environment debate, which has become associated with extremes of political viewpoints. It highlights the impossibility of completely divorcing the social from the scientific functions of psychology (see Chapter 3).

DEFINING INTELLIGENCE

ASK YOURSELF...

- How would you define intelligence?

Most definitions reflect the *psychometric approach*. As we saw in the *Introduction and overview*, this is concerned with the measurement of intelligence in order to compare 'how much' of it different individuals possess (see Table 41.1).

ASK YOURSELF...

- What similarities and differences are there between the different definitions in Table 41.1?

The definitions of Terman, Burt and Vernon all stress the purely cognitive/intellectual aspects of the concept, while those of Binet and Wechsler are much broader and perhaps closer to common-sense understanding. But Heim objects to the use of intelligence as a noun, because it smacks of an 'isolable entity or thing'. This is contrary to her belief that intelligence should be regarded as part of *personality as a whole*. Consequently, she prefers to talk about 'intelligent activity' rather than 'intelligence'.

Table 41.1 Some definitions of intelligence

'It seems to us that in intelligence there is a fundamental faculty, the impairment of which is of the utmost importance for practical life. This faculty is called judgement, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances. To judge well, to comprehend well, to reason well ...' (Binet, 1905)
'An individual is intelligent in proportion as he is able to carry on abstract thinking.' (Terman, 1921)
'... innate, general, cognitive ability' (Burt, 1955)
'... the aggregate of the global capacity to act purposefully, think rationally, to deal effectively with the environment' (Wechsler, 1944)
'... the effective all-round cognitive abilities to comprehend, to grasp relations and reason' (Vernon, 1969)
'Intelligent activity consists in grasping the essentials in a situation and responding appropriately to them.' (Heim, 1970)
'... the ability to deal with cognitive complexity' (Gottfredson, 1998)

Other definitions

An *operational definition* defines intelligence in terms of tests designed to measure it, that is, 'Intelligence is what intelligence tests measure' (Boring, 1923). But this begs the question as to what intelligence tests measure and is *circular* (the concept being defined is part of the definition itself). Miles (1967) argues that if we substitute the names of particular tests, then we can break into the circle, but Heim points out that this merely decreases the circumference of the circle!

Like Heim, Ryle (1949) believes that 'intelligence' doesn't denote an entity or an engine inside us causing us to act in particular ways. Rather, any action can be performed more or less intelligently, so it should be used as an adjective and not as a noun.

THEORIES OF INTELLIGENCE

Psychometric (factor-analytic) theories

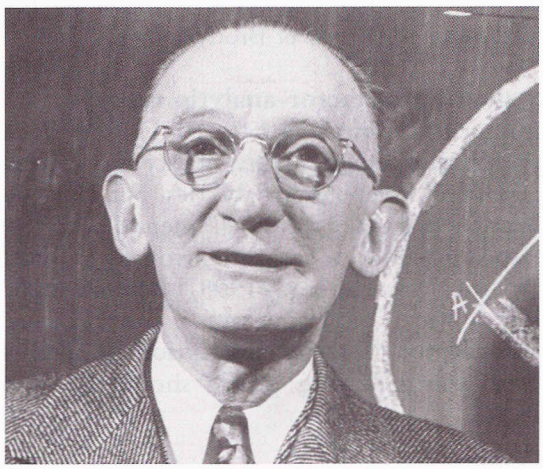
Psychometric theories are based upon analysis of scores of large numbers of individuals on various intelligence tests using a statistical technique called *factor analysis* (FA).

Box 41.1 Factor analysis (FA)

- This involves correlating the scores of a large sample of participants to determine whether scores on certain tests are related to scores on certain other tests (whether some, or any, of the tests have something in common).
- The basic assumption is that the more similar the scores on two or more tests (the higher the *correlation*), the more likely it is that these tests are tapping the same basic ability (or *factor*).
- For example, if we find that people's scores on tests A, B, C, D and E are highly correlated (if they score highly on

one they tend to score highly on the others), then it could be inferred that (a) all five tests are measuring the same ability, and (b) individuals differ according to how much or how little of that particular ability they have.
- But if there's very little relationship between scores on the five tests, then each test may be measuring a distinct ability, and when comparing individuals we'd have to look at each ability separately.

The two hypothetical outcomes in Box 41.1 correspond roughly to two theories of intelligence: (a) the 'London line' is associated with Spearman (1904, 1967), Burt (1949, 1955), and Vernon (1950); (b) the mainly American approach of Thurstone (1938) and Guilford (1959).



L.L. Thurstone (1887–1955)

Spearman's two-factor theory

Spearman factor-analysed the results of children's performance on various tests, and found that many tests were moderately positively correlated. He concluded that every intellectual activity involves both a general factor (*g* or general intelligence) and a specific factor (*s*), and differences between individuals are largely attributable to differences in their *g*. (*g* is, in fact, an abbreviation for *neogenesis,* the ability to 'educe relations', as in a common kind of test item which asks 'A is to Y as B is to ?'). *g* accounts for why people who perform well using one mental ability also tend to perform well in others, and is entirely innate.

Spearman himself believed that he'd discovered the elusive entity, the innate essence of intelligence, that would make psychology a true science. As Gould (1981) puts it:

> Spearman's *g* would be the philosopher's stone of psychology, its hard, quantifiable 'thing' – a fundamental particle that would pave the way for an exact science as firm and as basic as physics ...

Although this proved to be a rather exaggerated claim, Guilford (1936, in Gould, 1981) believed that:

> No single event in the history of mental testing has proved to be of such momentous importance as Spearman's proposal of his famous two-factor theory.

Burt and Vernon's hierarchical model

Burt (who was a student of Spearman) agreed that there's a *g* factor common to all tests, but also thought that the two-factor model was too simple. He and Vernon elaborated and extended Spearman's model by identifying a series of *group factors* (major and minor) in between *g* and *s* factors (see Figure 41.1). *g* is what *all* tests measure, the *major group factors* (v:ed and k:m) are what *some* tests measure (some to a greater extent than others), the *minor group factors* are what *particular* tests measure whenever they're given, while *specific factors* are what particular tests measure on specific occasions (Vernon, 1971).

An important *educational* implication of this model is that, given the dominance of *g* in the hierarchy, each child can be ranked on a single scale of (innate) intelligence. *g* can be measured early in life, and children sorted according to their intellectual promise. (This is the thinking behind the eleven-plus examination: see Box 41.3, pages 713–714.)

Thurstone's primary mental abilities

Using 14-year-olds and college students as his participants, Thurstone (1935, 1938, 1947) found that not all mental tests correlate equally. Rather, they appear to form

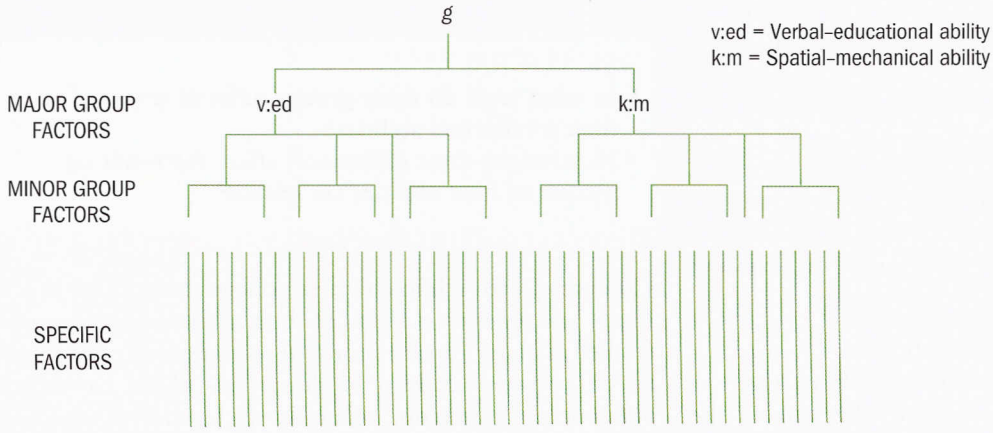


Figure 41.1 The hierarchical model of intelligence (after Vernon, 1950)

seven distinct factors or groupings, which he called *primary mental abilities* (PMAs), namely:

- *spatial* (S) – the ability to recognise spatial relationships
- *perceptual speed* (P) – the quick and accurate detection of visual detail
- *numerical reasoning* (N) – the ability to perform arithmetical operations quickly and accurately
- *verbal meaning* (V) – understanding the meaning of words and verbal concepts
- *word fluency* (W) – speed in recognising single and isolated words
- *memory* (M) – the ability to recall a list of words, numbers or other material
- *inductive reasoning* (I) – the ability to generate a rule or relationship that describes a set of observations.

Thurstone sometimes referred to these mental abilities as 'mental faculties' or 'the vectors of mind' (the title of his 1935 book). He saw *g* as a grand average of positive correlations for a particular battery of tests. This means that *g* can change according to the particular battery of tests used, and so it:

> ... has no fundamental psychological significance beyond the arbitrary collection of tests that anyone happens to put together ... We cannot be interested in a general factor which is only the average of any random collection of tests ... (Thurstone, 1940, in Gould, 1981)

So the PMAs are independent and uncorrelated. They correspond to the group factors in the hierarchical model, but there's no general factor to which they're all related. As there's no general ability, the overall ranking of pupils is inappropriate: some children will be good at some things, others at other things. He advocated the use of individual profiles of all PMAs. However, Thurstone (1947) later admitted that *g does* seem to be involved in all PMAs (having carried out a 'second-order' factor analysis on the results of the first: see Chapter 42).

Jensen (1980), a major advocate of the view that intelligence differences are largely genetic, believes that this change of mind by Thurstone proves that Spearman and Burt were right all along. Jensen is a 'pure Spearman-ian' (Gould, 1981), who claims that:

> To the extent that a test orders individuals on *g*, it can be said to be a test of intelligence.

However, Gould (1981) argues that *g* was still of secondary importance to the PMAs. Even after admitting a second-order *g*, Thurstone continued to contrast himself with the 'London line'.

Guilford's 'structure of intellect' model

This represents the most extreme alternative to Spearman's two-factor theory, and totally rejects the notion of a general intelligence factor. Guilford first classified a cognitive task along three major dimensions:

1. *content* (what must the participant think about?)
2. *operations* (what kind of thinking is the participant being asked to perform?)
3. *products* (what kind of answer is required?).

He identified five kinds of content, five kinds of operation, and six kinds of product which, multiplied together, yield a total of 150 distinct mental abilities (see Figure 41.2, see page 713). Guilford set out to construct tests to measure each of the 150 abilities, and tests have been devised to assess more than 70 (Shaffer, 1985). However, people's scores are often correlated, suggesting that the number of basic mental abilities is much smaller than Guilford assumed (Brody & Brody, 1976).

An evaluation of factor-analytic models

According to Vernon (1950, 1971), intelligence is neither a single general mental ability nor a number of more specific, independent abilities, but *both*. General intelligence plays a part in all mental activities, but more specific abilities are also involved in producing performance. Sternberg (1995) believes that this combined, hierarchical approach is probably the most widely accepted factorial description of intelligence. However, the following points should be borne in mind:

- there's more than one way of factor-analysing a set of data, and there's no 'best' way. Thurstone originally used a form of factor analysis (FA) which gives a 'simple structure' solution in contrast to the 'principal component' solutions resulting from Spearman's and Burt's analyses. Shackleton & Fletcher (1984) say that these two alternatives are mathematically equivalent, and the same data from the same sample can produce a number of different patterns of factors depending on which alternative is used
- Thurstone and Guilford used mainly college students, while Spearman, Burt, and Vernon used mainly schoolchildren.

ASK YOURSELF...

- In what ways do these groups differ in terms of their intellectual abilities?
- How might these differences affect the resulting picture of how abilities are related?

Compared with schoolchildren, college students are much more *homogeneous* in terms of their all-round intelligence (as well as being a much more *self-selected* group). So, differences between college students are likely to reflect differences in certain, relatively independent, abilities,

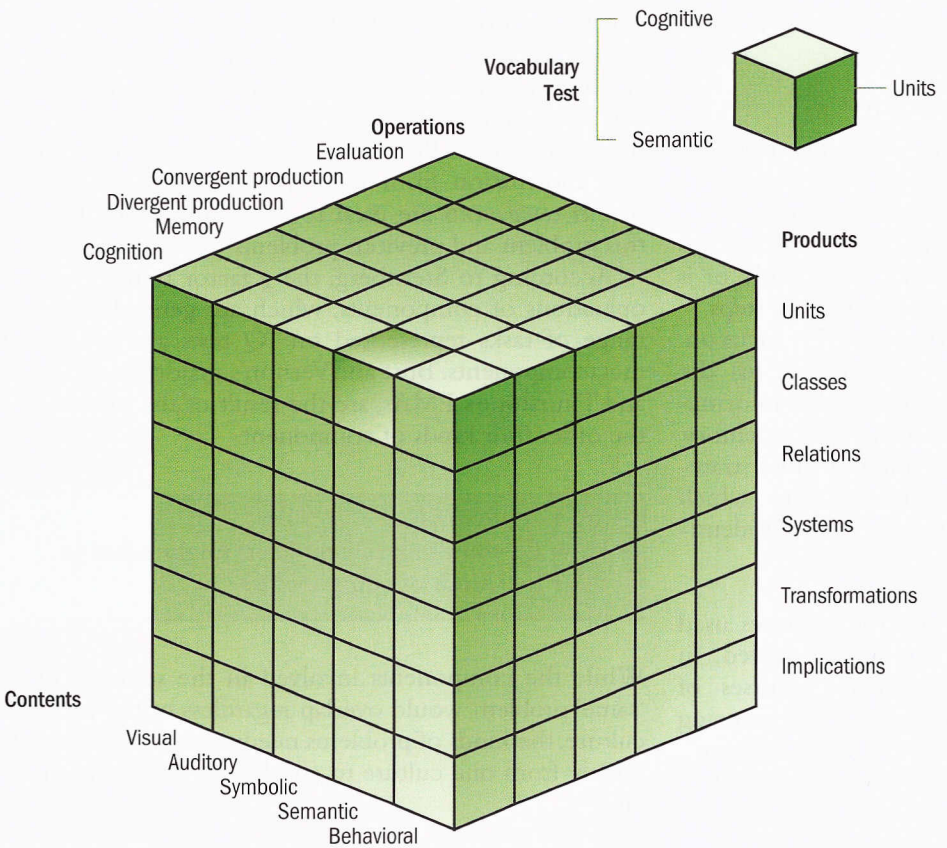


Figure 41.2 Guilford's (1967, 1982) structure of intellect model. (From Zimbardo, P. G., (1992) *Psychology and Life,* 13th ed. New York, Harper Collins Publishers. (Originally, Guilford identified 120 abilities, but he later distinguished between visual and auditory content (previously included under 'figural') giving $5 \times 5 \times 6 = 150$)

while differences between schoolchildren are likely to reflect more global, all-round ability.

- FA produces a cluster of intercorrelations between different tests and sub-tests – it's then up to the researcher to scan these patterns of intercorrelations and to label them. As Radford (1980) says, factors don't come 'ready-labelled', and the labels that are attached to the factors are only 'best guesses' about the psychological meaning of the factors – they may or may not reflect 'psychological reality'. In other words, clusters of intercorrelations are meaningless until they're given an interpretation by a psychologist
- once a factor has been labelled (e.g. 'verbal ability'), there's the danger of believing that it exists in some objective way (*reification*). But in reality, a factor is merely a statistic (or 'mathematical abstraction': Gould, 1981). As Gillham (1978) puts it:

> Factors, like human beings, are born with no name although there is usually one waiting for them, which may not fit their character very well. But as with their human counterparts they soon become assimilated to their name ...
>
> Human beings, however, have the advantage over factors in that their meaning does not reside just in their name. Factors, like correlation coefficients, have no intrinsic psychological significance: meaning is ascribed to them by a psychologist with his preferences and presuppositions ...

Fluid and crystallised intelligence

Working within the FA approach, Cattell (1963) and Horn & Cattell (1967, 1982) have proposed a model which can to some degree reconcile the different models discussed above. They argue that *g* can be subdivided into two major dimensions – *fluid* and *crystallised intelligence.*

- *Fluid intelligence* (*gf*) is the ability to solve abstract relational problems of the sort that aren't taught, and which are relatively free of cultural influences. It increases gradually throughout childhood and adolescence as the nervous system matures, then levels off during young adulthood, and after that begins a steady decline
- *Crystallised intelligence* (*gc*) increases throughout the lifespan, and is primarily a reflection of one's cumulative learning experience. It involves understanding

relations or solving problems which depend on knowledge acquired as a result of schooling and other life experiences (e.g. general knowledge, word comprehension and numerical abilities).

The information-processing approach

According to Fishbein (1984), the *information-processing approach* sees intelligence as the steps or processes people go through in solving problems. One person may be more intelligent than another, because s/he moves through the same steps more quickly or efficiently, or is more familiar with the required problem-solving steps.

Advocates of this view (e.g. Sternberg, 1979) focus on: (i) how information is internally represented; (ii) the kinds of strategies people use in processing that information; (iii) the nature of the components (e.g. memory, inference, comparison) used in carrying out those strategies; and (iv) how decisions are made as to which strategies to use. Regarding (iii), Sternberg (1987) identifies five major kinds of components:

1. *metacomponents* – higher-order control processes used in planning how a problem should be solved, in making decisions regarding alternative courses of action during problem-solving, and in monitoring one's progress during the course of problem solution
2. *performance components* – processes used in the actual execution of a problem-solving strategy
3. *acquisition components* – processes used in learning (acquisition of knowledge)
4. *retention components* – processes used in remembering (retrieval of previously acquired information)
5. *transfer components* – processes used in generalising (transfer of knowledge from one task or task context to another).

ASK YOURSELF...

- How might these five kinds of components be applied in the solution to the problem presented in Box 41.2?

Box 41.2

- Mrs Smith decided to impress Mrs Jones.
- She went to a costume jewellery shop and bought three imitation diamonds of equal value.
- She received £4 in change from the £10 note she gave the assistant. (But as Mrs Smith was receiving her change, Mrs Jones walked into the shop!)
- How much did each imitation diamond cost?

Metacomponents would be used in setting up the equations for solving the problem (e.g. in deciding that the problem can be solved by subtracting £4 from £10 and dividing the difference by three). They must also decide what information is relevant and what isn't. *Performance components* would be used in the actual solution of these equations to obtain first £6 as the price of the imitation diamonds and, then, £2 as the price of each item. *Acquisition components* were used in the problem-solver's past to learn how to set up the equation, how to subtract, divide and so on. *Retention components* are used to retrieve this information from memory when it's needed, and *transfer components* are used to draw an analogy between this problem and previous problems of a similar kind.

According to Sternberg, the *g* factor results from the operations of components, which are general across the range of tasks represented on IQ tests and are mainly metacomponents. Burt and Vernon's major group factors, and Thurstone's PMAs, are the result of the operation of the other four kinds of component.

ASK YOURSELF...

- How do you think *cultural factors* might relate to these five kinds of components?

While the components involved in the solution of the 'same' problem would overlap regardless of the particular culture, the kinds of problems needing solution will differ widely from one culture to another. As Sternberg (1987) says:

> ... the kinds of persons who are considered intelligent may vary widely from one culture to another, as a function of the components that are important for adaptation to the requirements of living in the various cultures.

Cultural context is central to Sternberg's contextual subtheory (see below), and the cultural nature of intelligence is discussed below (see page 719).

Information-processing theories are intended to be *universal* (like Piaget's), and at the same time to explain *individual differences* (like factor-analytic theories). As Fishbein (1984) puts it, they see intelligence as neither an 'it' (for example *g*) nor a 'them' (for example, PMAs), but as everything the mind does in processing information.

Sternberg's triarchic theory

Sternberg's (1985, 1988a) *triarchic theory* incorporates the components involved in information-processing, but is far broader. It comprises three *subtheories* which attempt to explain, in an integrative way, the relationship between:

- intelligence and the individual's *internal* world – that is, the mental mechanisms which underlie intelligent behaviour (the *componential subtheory*)
- intelligence and the individual's *external* world – that is, how these mechanisms are used in everyday life to attain an intelligent fit with the environment (the *contextual sub-theory*)

- intelligence and experience – that is, 'the mediating role of one's passage through life between the internal and external worlds of the individual' (Sternberg, 1990) (the *experiential subtheory*).

Componential subtheory

One of the most interesting classes of performance components are those found in *inductive reasoning,* the kind of thinking required in series completion tasks and analogies (e.g. 'A is to B as Y is to ?'). Sternberg (1990) believes that identifying these performance components can provide insight into the nature of *g.* However:

> ... there is more to intelligence than a set of information-processing components. One could scarcely understand all of what it is that makes one person more intelligent than another by understanding the components of processing on, say, an intelligence test ...

Contextual subtheory

Intelligent thought isn't aimless or random mental activity, but is directed towards one or more of three behavioural goals: *adaptation* to an environment, *shaping* of an environment, and *selection* of an environment. Regarding adaptation, Sternberg (1990) argues that what is intelligent in one culture may be considered unintelligent in another:

> To understand intelligence, one must understand it ... in terms of how thought is intellectually translated into action in a variety of different contextual settings ...

Shaping may represent the essence of intelligent thought and behaviour:

> Perhaps it is this skill that has enabled human kind to reach its current level of scientific, technological, and cultural advancement ... In science, the greatest scientists are those who set the paradigms (shaping), rather than those who merely follow them (adaptation) ...

Experiential subtheory

Intelligence is best measured at those regions of the experiential continuum that involve tasks or situations that are either relatively novel, on the one hand, or in the process of becoming automatised, on the other. To test how far children's understanding extends, you might give them problems which are just at the limits of their current understanding (this is similar to Vygotsky's *zone of proximal development:* see Chapter 34). Several sources of evidence suggest that the ability to deal with relative novelty is a good way of measuring intelligence.

ASK YOURSELF...

- In terms of *attention* theory and research, why is the ability to *automatise* so important? (See Chapter 13.)

The ability to *automatise* information-processing (e.g. as shown by a skilled reader: see Chapter 40) makes more resources available for dealing with novelty.

According to Bee (1989), standard IQ tests have omitted many of the kinds of abilities included under the contextual and experiential subtheories. In the world outside school, these may be required at least as much as those included under the componential subtheory. Clearly, traditional IQ tests don't measure all significant aspects of intellectual skill (see below, pages 713–717).

Gardner's theory of multiple intelligences

Gardner's (1983) *theory of multiple intelligences* (MI theory) is based on three fundamental principles:

1. Intelligence isn't a single, unitary thing but a collection of multiple intelligences, each one a *system* in its own right (as opposed to merely separate aspects of a larger system, i.e. 'intelligence').
2. Each intelligence is independent of all the others.
3. The intelligences interact, otherwise nothing could be achieved.

MI theory also makes two strong claims:

1. All humans possess all these intelligences, and collectively they can be considered a cognitive definition of *homo sapiens.*
2. Just as we all look different and have unique personalities and temperaments, so we also have different profiles of intelligences. No two individuals, not even identical twins, have exactly the same mix of intelligences, with the same strengths and weaknesses (see Chapter 42).

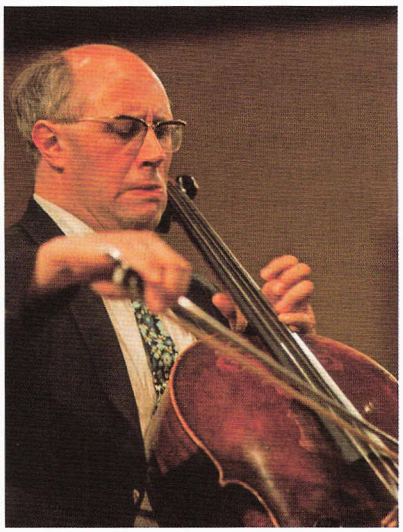
Gardner (1998) defines an intelligence as:

> ... a psychobiological potential to solve problems or fashion products that are valued in at least one cultural context.

Entire cultures may encourage the development of one or other intelligence. For example, the seafaring Puluwat of the Caroline Islands (in the South Pacific) cultivate spatial intelligence and excel at navigation. The Manus children of New Guinea learn the canoeing and swimming skills that elude the vast majority of western children (Gardner, 1998).

Gardner (1983) originally identified seven intelligences, and added an eighth, *naturalistic* (or 'the naturalist'), in 1995. Darwin is a good example. Gardner is currently considering the possibility of a ninth – *existential* intelligence, which captures the human tendency to raise and ponder fundamental questions about existence, life, death, and so on (e.g. the existential philosopher, Kierkegaard) (Gardner, 1998).

Gardner identifies eight different criteria for distinguishing an independent intelligence, including the following:



Musical intelligence in action



These boys from Papua New Guinea display how intelligence can be defined in terms of adaptations to the cultural environment

- *potential isolation by brain damage:* each intelligence resides in a separate region of the brain, so that a given intelligence should be isolable by studying brain-damaged patients. For example, naturalistic intelligence is based on evidence that certain parts of the temporal lobe are dedicated to naming and the recognition of natural things, while others are attuned to human-made objects. Brain-damaged people sometimes lose the capacity to identify living things, but can still name inanimate objects (Gardner, 1998: see Chapter 4)

Table 41.2 Gardner's eight intelligences

Linguistic: Includes skills involved in reading, writing, listening and talking
Logical–mathematical: Involved in numerical computation, deriving proofs, solving logical puzzles, and most scientific thinking
Spatial: Used in marine navigation, piloting a plane, driving a car, working out how to get from A to B, figuring out one's orientation in space. Also important in the visual arts, playing chess, and recognising faces and scenes
Musical: Includes singing, playing an instrument, conducting, composing and, to some extent, musical appreciation
Bodily–kinaesthetic: Involves the use of one's whole body or parts of it, to solve problems, construct products and displays. Used in dance, athletics, acting and surgery
Interpersonal: Includes understanding and acting upon one's understanding of others – noticing differences between people, reading their moods, temperaments, intentions, and so on. Especially important in politics, sales, psychotherapy and teaching
Intrapersonal: Self-understanding – symbolised in the world of dreams
Naturalistic: Permits the recognition and categorisation of natural objects (as in biology, zoology etc.)

- an identifiable *core operation or set of operations*
- support from *psychometric findings* (patterns of intercorrelations, based on FA: see Box 41.1)
- the existence of *idiots savants, prodigies,* and other *exceptional individuals* (see Chapter 40).

ASK YOURSELF...

- Explain how savant abilities suggest the existence of separate intelligences.

According to Gardner (1998), critics of MI theory are nervous about moving away from standardised tests and adopting a set of criteria that is less quantifiable. Many prefer to talk about musical or bodily-kinaesthetic *talents* rather than intelligences:

> Such a narrow definition, however, devalues these capacities, so that orchestra conductors and dancers are talented but not smart. In my view, it would be all right to call those abilities talents, so long as logical reasoning and linguistic facility are then also termed talents.

INTELLIGENCE TESTING

A brief history of intelligence tests

The Stanford–Binet test

In 1904, Binet and Simon were commissioned by the French government to devise a test which would identify those children who wouldn't benefit from ordinary schooling because of their inferior intelligence. The result was the Simon–Binet test (1905), generally accepted as the first intelligence test. The sample of children used for the development of the test (the *standardisation sample*) was very small, and it was subsequently revised in 1908 and 1911, using much larger samples.



Alfred Binet (1857–1911)

In 1910, Terman, at Stanford University in California, began adapting the Simon–Binet test for use in the USA. The test became known as the *Stanford–Binet* test, and is still referred to in this way. The first revision was published in 1916, followed by the Terman–Merrill revision (1937), which comprised two equivalent forms (L and M). In 1960, the most useful questions from the 1937 revision were combined into a single form (L–M) and an improved scoring system was used. Prior to 1960, the Stanford–Binet test was designed for individuals up to age 16 (starting at two-and-a-half to three), but this was extended to 18 in the 1960 revision.

A further revision was published in 1973, and the most recent in 1986, which is designed for people from age two years up to 23 years, 11 months. Subtests assess verbal reasoning, quantitative (mathematical) reasoning, abstract and visual reasoning, and memory. The testee is given a vocabulary test that serves as a routing test to determine the starting level for all the other scales (Sparrow & Davis, 2000).

In the 1986 revision, items are grouped into four broad areas of intellectual ability: (i) verbal reasoning; (ii) abstract/visual reasoning; (iii) quantitative reasoning; and (iv) short-term memory. A separate score is obtained for each area (whereas previously a single overall IQ score was given).

The Wechsler tests

Wechsler developed the most widely used test of adult intelligence, the Wechsler adult intelligence scale (WAIS, 1944), revised in 1958 and again in 1981 (WAIS-R). WAIS-III (1997) is designed for use with adults aged 16–89. Like WAIS-R, WAIS-III is constructed much like the Wechsler intelligence scale for children (WISC). This was first published in 1949 and revised in 1974 (WISC-R), and again in 1991 (WISC-III), and is designed for children between 5–15 years. Finally, the Wechsler preschool primary scale of intelligence (WPPSI, 1963; WPPSI-R, 1989) is designed for four- to six-and-a-half year olds.

The Wechsler tests produce three IQ scores: *verbal, performance,* and *full* (combined or general) IQs. Although there's much debate about the *atheoretical* nature of all the Wechsler tests, they're by far the most widely used cognitive assessment instruments today, both in the USA and around the world, having been translated into French, Greek, Japanese and Chinese (Sparrow & Davis, 2000) (see Table 41.3, page 714).

Army alpha and beta tests

The Stanford–Binet and Wechsler tests are *individual tests* (i.e. given to one person at a time). *Group tests* are administered to several people at once (as in written exams.) A major impetus to the development of group testing was America's involvement in World War I. A quick and easy method of selecting over one million recruits was needed, and the result was the *army alpha* and *beta tests* (see Gould, 1981).

The British ability scales (BAS)

The *British ability scales* (Elliot *et al.*, 1979) were designed for use with two-and-a-half to 17-year-olds. Five major 'mental processes' are assessed, including retrieval and application of knowledge, and speed of information-processing. The latter is meant to underlie performance on all the other subscales, and is one of the novel features of the test, reflecting the influence of the information-processing approach (see Chapter 34).

Like the Wechsler scales, the BAS gives three IQ scores – verbal, visual, and overall (general) IQs. In keeping with Thurstone's PMA model, the aim was to construct an intelligence scale which would provide a profile of special abilities, rather than merely produce an overall IQ figure (Richardson, 1991).

The original British test was revised and standardised in the USA as the *differential abilities scale* (Elliott, 1990), although it's used mainly in the UK. Its British revision (BASII, 1996, cited in Sparrow & Davis, 2000) was based on a new standardisation sample of 1700 British children, and the upper age limit is now 17 years, 11 months. Scales are now clearly divided into *early years* (2 years, 6 months to 5 years, 11 months) and school age (6 years to 17 years, 11 months).

Box 41.3 Some differences between individual and group tests

- *Individual tests* are used primarily as *diagnostic* tests in a clinical setting (for example, to assess the ability of a child with learning difficulties (see Chapter 40). *Group tests* are used primarily for *selection* and *research* purposes. For example, until the mid-1960s the eleven-

Table 41.3 Some items from the Stanford–Binet (1973) and the two scales of the WAIS-R (1981)

Stanford–Binet	Wechsler adult intelligence scale (WAIS-R)
Children of three should be able to: Point to objects that serve various functions (e.g. 'goes on your feet') Repeat a list of two words or digits (e.g. 'can', 'dog') **Children of four should be able to:** Discriminate visual forms (e.g. squares, circles, triangles) Define words (e.g. 'ball', 'bat') Repeat 10-word sentences, count up to four objects, solve problems (e.g. 'In daytime it is light, at night it is ...') **Children of nine should be able to:** Solve verbal problems (e.g. 'Tell me a number that rhymes with tree') Solve simple arithmetic problems and repeat four digits in reverse order **Children of twelve should be able to:** Define words (e.g. 'skill', 'muzzle') Repeat five digits in reverse order Solve verbal absurdities (e.g. 'One day we saw several icebergs that had been entirely melted by the warmth of the Gulf Stream. What's foolish about that?')	**Verbal scale** (none of the subtests is timed): • **Information**: general knowledge • **Comprehension**: ability to use knowledge in practical settings (e.g. 'What would you do if you were lost in a large, strange town?') • **Arithmetic** • **Similarities**: conceptual and analogical reasoning (e.g. 'In what ways are a book and TV alike?') • **Digit span**: STM (e.g. repeating a string of digits in the same/reverse order) • **Vocabulary**: word meaning **Performance scale** (all subtests are timed): • **Picture completion**: assessment of visual efficiency and memory by spotting missing items in drawings • **Picture arrangement**: assessment of sequential understanding by arranging a series of pictures to tell a story • **Block design**: ability to perceive/analyse patterns by copying pictures using multicoloured blocks • **Object assembly**: jigsaw puzzles • **Digit symbol**: ability to memorise and order abstract visual patterns

plus examination determined the kind of secondary schooling that every child in England and Wales would receive. It consisted largely of an intelligence test, designed largely to assess *g*.

- *Individual tests* usually involve some *performance items* (as in the Wechsler performance scale: see Table 41.3). *Group tests* are 'pencil-and-paper' tests, and in this way are much like other written exams.

ASK YOURSELF...

- Can you think of some advantages and disadvantages of individual and group tests?

- *Individual tests* are much more time-consuming than group tests, and can be administered only by specially trained testers – usually educational or clinical psychologists (see Chapter 1). There's some degree of flexibility as to how the test is conducted (such as how long the child is allowed to relax before the test proper begins), and some room for interpreting the child's answers.
- *Group tests*, which are timed, can be administered by teachers, researchers, and other non-trained personnel. Marking is usually done using a special marking key or by computer. In this respect, group tests are more *objective*.

What do intelligence tests measure?

IQ tests represent one kind of *ability* test, designed to measure underlying constructs that aren't a direct result of training (Coolican *et al.*, 1996). This contrasts with *attainment* (or *achievement*) tests (such as tests of reading and comprehension, spelling, and numeracy) designed to assess *specific* school learning. *Aptitude* tests are aimed at measuring *potential* performance (such as a logic test aimed at predicting how good someone would be at computer programming). Gottfredson (1998) describes IQ tests as tests of 'mental aptitude rather than accumulated knowledge' or 'pure *g*'.

The relationship between intelligence and IQ

ASK YOURSELF...

- Try to formulate some arguments for and against the claim that IQ is a valid measure of intelligence.

From the *psychometric* perspective, an individual's score on an intelligence test (his/her intelligence quotient or IQ) is an accurate measure of his/her intelligence. Effectively, and implicitly, an *operational definition* of intelligence is made (see above, page 706). But this begs many fundamental questions, relating to the *meaning* of the IQ (first introduced by Stern in 1912).

What kind of concept is IQ? Ratio and deviation IQs

Before 1960, the Stanford–Binet test calculated IQ by expressing *mental age* (MA) as a ratio of *chronological age* (CA) and multiplying by 100 (so as to produce a whole number). Hence, the first IQ was a *ratio IQ*. The Wechsler tests have instead always used a *deviation IQ*. This expresses the test result as a *standard score,* that is, it tells the tester how many standard deviations (SDs) above or below the mean of the testee's age group the score lies. Although all tests are designed in such a way as to produce a normal curve (a symmetrical distribution of IQ scores with a mean of 100), the SD (or dispersal of the scores around the mean) can still differ from test to test.

Box 41.4 Demonstrating the difference between intelligence and IQ

- Imagine two tests, A and B. Test A has a standard deviation (SD) of 10, and test B has a SD of 20. In both cases, 68 per cent (approximately) of children would be expected to have scores one SD below or above the mean (i.e. between 90 and 110 in test A, and between 80 and 120 in test B).
- So, a particular child might have a score of 110 on test A and 120 on test B, and yet the scores would be telling us the same thing.

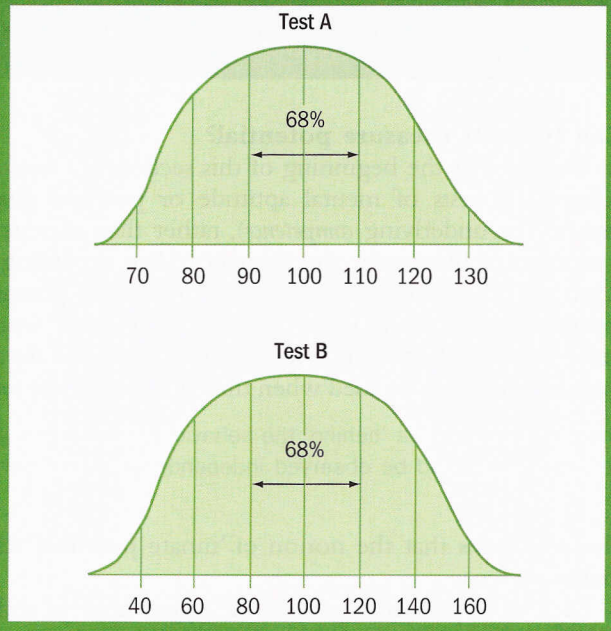


Figure 41.3 Normal curves of two hypothetical IQ tests, each with a different standard deviation

This suggests that while intelligence is a *psychological* concept, IQ is a purely *statistical* concept. If it's possible for the same characteristic (intelligence) to be assigned different values according to which test is used to measure it, then instead of asking 'How intelligent is this individual?, we should ask 'How intelligent is this individual as measured by this particular test?'. Since the IQ score of the same individual can vary according to the SD of the particular test being used, we cannot equate 'IQ' with 'intelligence'.

How is IQ measured? Ordinal vs interval scales

While an operational definition of, say, someone's height is uncontroversial, in the case of intelligence there's a genuine debate concerning what it *is* – and unless we know what it is, we cannot be sure we're measuring it properly. In agreeing with Heim that to name the particular test used is merely to reduce the circumference of the circle represented by an operational definition (see page 706), we could take this a step further by saying that for each separate test there exists a separate circle!

According to Ryan (1972), IQ creates the impression that we know in some absolute way what an individual's intellectual ability is. But unlike height, which is measured on an *interval* or *ratio scale,* IQ is measured on an *ordinal* scale, which tells us only whether one person is more or less intelligent than another (it's a *relative* measurement). We can measure one person's height accurately without knowing anyone else's, but the purpose of IQ tests is always to *compare* people's scores with those of others from the same population and of approximately the same age (Grigorenko & Sternberg, 2003: see below). (The BAS claims to give 'direct estimates of ability' (that is, it claims to use interval scaling), as if by a dipstick or linear rule, but Richardson (1991) doubts that this claim is valid.

Are IQ tests properly standardised?

Standardisation requires testing a large, representative sample of the population for whom the test is intended, otherwise the resulting norms cannot be used legitimately for certain groups of individuals. In the 1960 revision of the Stanford–Binet test, Terman and Merrill took only the population included in the census as their reference group, which excluded many migrant and unemployed workers.

More seriously, both tests were standardised on whites only, and yet they were to be used with both black and white children. As Ryan (1972) says, these tests are therefore tests of white abilities. This means that any comparison between black and white children is really an assessment of 'how blacks do on tests of white intelligence'. The 1973 revision of the Stanford–Binet did include black children in the 2100-strong standardisation sample.

Are IQ tests valid?

ASK YOURSELF...

- What do you understand by the validity of a psychological test?
- What does it mean in the context of intelligence?

A test is valid if it measures what it claims to measure. In relation to intelligence tests, the question is 'Do they measure intelligence?'. There are different kinds of validity and ways of measuring it (see Coolican, 2004), but probably the most commonly used in relation to psychological tests in general, and IQ tests in particular, is *predictive validity* (or *efficiency*). This refers to the correlation of a test with some future criterion measure, and the most common and powerful external criterion is *educability* or *educational success*. Also important is occupational success.

Before 1937, the mean score of women on the Stanford–Binet was ten points lower than that of men, and it was decided to eliminate this discrepancy by modifying the items so that average scores for men and women were the same. Heather (1976) asks why this hasn't been done with blacks. The answer lies in the test's predictive validity. Changing a test in order to eliminate racial differences, while not also changing social inequalities, would make the test a less efficient predictive tool. Removing the male–female bias did, in fact, make the test less efficient as a predictor of gender differences in educational and occupational success (Heather, 1976).

Do IQ tests predict educational success?

According to Gottfredson (1998):

> Intelligence as measured by IQ tests is the single most effective predictor known of individual performance at school and on the job. It also predicts many other aspects of well-being, including a person's chances of divorcing, dropping out of high school, being unemployed or having illegitimate children.

Typically, conventional IQ tests will correlate 0.4–0.6 with school grades. However, a test that predicts performance with a correlation of, say, 0.5, still accounts for only 25 per cent of the variation between the performance of different individuals (variation is calculated as the correlation squared = 0.5 squared = 0.25). This leaves 75 per cent of the variation unexplained, so there must be more to school performance than IQ! (Sternberg, 1998).

The predictive validity of tests declines when they're used to forecast outcomes in later life, such as job performance, salary, or obtaining the job in the first place. Generally, the correlations are just over 0.3, meaning that the tests account for roughly 10 per cent of the variation in people's performance. Also, the content of IQ tests has changed little from what it was at the beginning of the twentieth century (Sternberg, 1998).

According to Deese (1993): 'Tests have very modest correlations with performance in skills that society deems important', and Ceci & Liker (1986) claimed that 'IQ is unrelated to real-world forms of cognitive complexity'. However, teachers, doctors, accountants, pharmacists, lawyers and other professionals have a mean IQ above 120, while people in semi-skilled and low-skilled occupations (such as barbers, farm hands and labourers) score below 100 (Grigorenko & Sternberg, 2003). So, does IQ genuinely measure something worthwhile after all?

Box 41.5 What the predictive validity of IQ tests really means

- All the variables (including cognitive ability) that contribute to school success also contribute to performance on IQ tests. So, we'd expect a high correlation for this reason alone.
- Heather (1976) argues that 'general intelligence' can be called 'school intelligence', the ability to do well at school. Similarly, Richardson (1991) asks whether the correlation with school performance makes IQ tests valid tests of *educational prediction* rather than valid tests of intelligence.
- According to Ryan (1972), to the extent that tests measure educability, they're measuring something that is influenced to a considerable extent by various social and motivational factors. This conflicts with the test's purpose, namely to measure only cognitive ability or potential.
- According to Moghaddam (2002):

  ... a view of intelligence as inherently fixed and of society as being stratified on the basis of ability, so that those of lower intelligence remain at the lower levels and those of higher intelligence maintain their places at the top levels, is more likely to lead individuals to accept the status quo.

Can IQ tests measure potential?

As we noted at the beginning of this section, IQ tests are designed as tests of mental aptitude or potential (basic capacity or underlying *competence*), rather than as tests of attainment/achievement (performance). But according to Ryan (1972), it's logically impossible to measure potential separately from some actual behaviour. In other words, some of the skills that individuals have developed during their lifetime must be used when they do intelligence tests:

> There is nothing extra 'behind' the behaviour corresponding to potential that could be observed independently of the behaviour itself.

She concludes that the notion of 'innate potential' itself makes no sense.

Each of us presumably has some upper limit of ability (what we could do under ideal conditions, when we're maximally motivated, well, and rested). But everyday conditions are rarely ideal, and we typically perform below this hypothetical ability. Bee (1994) agrees with Ryan that it's not possible to measure competence, and so we're always measuring 'today's' performance. As Bee says:

> All IQ tests are really achievement tests to some degree. The difference between tests called IQ tests and those called achievement tests is really a matter of degree.

Are IQ tests culturally biased?

ASK YOURSELF...

- What do you understand by the terms '*culture-fair*' and '*culture-free*'?
- How do you think they might apply to IQ tests?

If the potential/achievement distinction is untenable in principle, it assumes even greater significance in the context of the debate concerning culture-fair and culture-free tests. According to Frijda & Jahoda (1966), a *culture-free* test would actually measure some inherent quality or capacity equally well in all cultures. There's no such test. A *culture-fair* test:

- could be a set of items which are equally unfamiliar to all possible persons in all possible cultures, so that everyone has an equal chance of passing (or failing) them (this is often called a *culture-free* test), or
- could comprise multiple sets of items, modified for use in each culture to ensure that each version would contain the same degree of familiarity; this would give members of each culture about the same chance of being successful with their respective versions.

The first option is virtually impossible. According to Segall *et al.* (1999), the second option is a theoretical possibility, but in practice it's very difficult to construct. Since the emphasis on language has been one of the more obvious sources of bias in traditional IQ tests, tests claiming to be culture-fair are often non-verbal. A well-known example is Raven's progressive matrices (see Figure 41.4).

However, the very nature of the task is something that is likely to reflect particular cultural experiences. Owen & Stoneman (1972) believe that because the influence of language is so pervasive, any attempt to devise a culture-fair test by removing 'overt language structures' is doomed to failure. Vernon (1969) rejects the idea of a culture-fair test.

ASK YOURSELF...

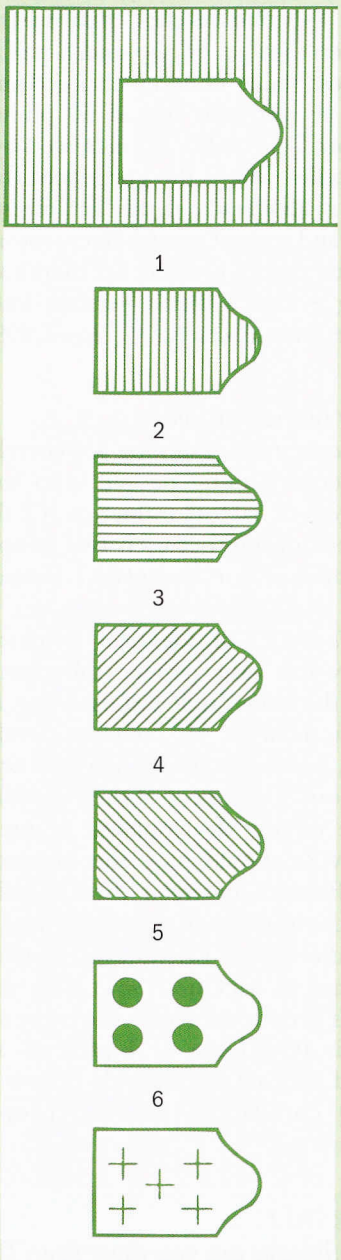


Figure 41.4 A sample item from Raven's progressive matrices test

- Even without any written instructions, you can probably infer what you have to do.

CRITICAL DISCUSSION 41.1 Intelligence as a cultural phenomenon

- A major reason that the construction of culture-fair tests has proved so problematical could be that the very notion of intelligence is itself culturally defined. For example, Bruner (in Gillham, 1975) maintains that:

  The culture-free test is the intelligence-free test, for intelligence is a cultural concept.

- Similarly, Gillham (1975) argues that any attempts to 'define' intelligence which don't involve identifying 'specially valued cultural attainments' must fail. The concept of intelligence derives its meaning only within a particular cultural and social context (see Sternberg's *contextual subtheory:* page 711).
- Something which can never be 'built-in' to a test's construction (or translation) is the meaning of the experience of taking an intelligence test. Taking tests of various kinds is a familiar experience for members of western culture (both within and outside education), but what about cultures in which there's no generally available schooling?
- The very nature or form of the tasks involved in an IQ test (as distinct from the content) is something that has

a cultural meaning. For example, Glick (1975, in Rogoff & Morelli, 1989) asked members of the Kpelle people to sort 20 familiar objects into groups. They did this by using *functional groupings* (such as knife with orange, potato with hoe), rather than taxonomic groups, which the researcher thought more appropriate. When their way of classifying the objects was challenged, they often explained that this was how a wise man would do it. When the exasperated researcher finally asked 'How would a fool do it?', the objects were immediately arranged into four neat piles of foods, tools, clothing, and utensils (i.e. *taxonomic groups!*). The Kpelle participants and the American researcher differed in their beliefs about the intelligent way of doing things.

- Different cultures may also promote the development of different abilities. For example, Serpell (1979) predicted that Zambian children would perform better than English children on a task in which they were required to copy objects using bits of wire. This was based on the observation that children all over central and southern Africa are very skilled at constructing wire cars from scraps of wire as a popular form of play. He also predicted that the English children would perform better when asked to draw the objects. Both predictions were supported, demonstrating that the abstract psychological function of pattern reproduction can be manifested in different ways according to the demands of the *ecocultural niche* to which participants' behaviour is adapted (Serpell, 1994).

We need to take culture into account when considering both the nature and the assessment of intelligence (Sternberg, 1995).

EXPLAINING INDIVIDUAL DIFFERENCES: HEREDITY AND ENVIRONMENT

According to Sternberg & Grigorenko (1997), virtually all researchers accept that:

- both heredity and environment contribute to intelligence
- heredity and environment interact in various ways
- extremely poor, as well as highly enriched, environments can interfere with the realisation of a person's intelligence, regardless of his/her heredity.

Genetic influences

Studies of IQ stability

Since people's genetic inheritance is a constant, then if measured intelligence (an IQ test score) is largely determined by genetic factors, there should be a high degree of continuity in IQ throughout a person's lifespan (McGurk, 1975). IQ isn't normally used as a measure of intelligence below age two. Instead, a *developmental quotient* (DQ) is used. This assesses a child's developmental rate compared with an 'average' child of the same age (Bayley, 1969). The younger a child is when given a developmental test, the lower the correlation between its DQ and later IQ. Once IQ is measurable, it becomes a better predictor of adult IQ.

Although the *stability coefficients* reported by some researchers (e.g. Honzik *et al.*, 1948) are impressive, they're based on large numbers of people and tend to obscure individual differences. Others have reported very low stability coefficients. For example, McCall *et al.* (1973) found that in 140 middle-class children, the average IQ change between the ages of two-and-a-half and 17 was 28 points. The most 'stable' children changed an average of 10 points, while 15 per cent shifted 50 points or more in either direction. One child's IQ increased by 74 points!

Even in studies where the correlation between IQ at different ages is statistically significant, the stability coefficients are low and suggest greater fluctuation in scores than a simple genetic theory predicts. So, there's a large amount of convincing evidence that a person's intelligence level can alter, sometimes substantially (Howe, 1997).

Family resemblance studies

Family resemblance studies examine the correlation in intelligence test scores among people who vary in genetic similarity. If genetic factors influence IQ, then the closer the genetic relationship between two people, the greater the correspondence (or *concordance*) between their IQs should be.

Monozygotic (MZ) or identical twins are unique in having exactly the same genetic inheritance, since they develop from the same single fertilised egg. *Dizygotic* (DZ) or non-identical twins, by contrast, develop from two fertilised eggs, and are no more alike than ordinary siblings (they share about 50 per cent of their genes). If genes have any influence on the development of measured intelligence, then MZs should have the highest concordance rates. Any difference between them would have to be attributed to environmental or experiential influences.

Many studies (e.g. Erlenmeyer-Kimling & Jarvik, 1963; Bouchard & McGue, 1981) have shown that the closer people's genetic similarity, the more strongly correlated are their IQs. Table 41.4 presents a summary of Bouchard and McGue's worldwide review of 111 studies reporting IQ correlations between people of varying genetic similarity.

ASK YOURSELF...

- What conclusions can you draw from Table 41.4 regarding the influence of genetic factors?

Table 41.4 shows that the closer the genetic relationship between two individuals, the stronger the correlation between their IQ scores. So, the correlation between

Table 41.4 Familial correlations for IQ. The vertical bar on each distribution indicates the median correlation. The arrow indicates the correlation predicted by a simple polygenic model (that is, the view that many pairs of genes are involved in the inheritance of intelligence) (based on Bouchard & McGue, 1981)

	0.0 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00	No. of correlations	No. of pairings	Median correlation	Weighted average
Monozygotic twins reared together		34	4672	0.85	0.86
Monozygotic twins reared apart		3	65	0.67	0.72
Midparent–midoffspring reared together		3	410	0.73	0.72
Midparent–offspring reared together		8	992	0.475	0.50
Dizygotic twins reared together		41	5546	0.58	0.60
Siblings reared together		69	26 473	0.45	0.47
Siblings reared apart		2	203	0.24	0.24
Single parent–offspring reared together		32	8433	0.385	0.42
Single parent–offspring reared apart		4	814	0.22	0.22
Half-siblings		2	200	0.35	0.31
Cousins		4	1176	0.145	0.15
Non-biological sibling pairs (adopted/natural pairings)		5	345	0.29	0.29
Non-biological sibling pairs (adopted/adopted pairings)		6	369	0.31	0.34
Adopting midparent–offspring		6	758	0.19	0.24
Adopting parent–offspring		6	1397	0.18	0.19
Assortative mating		16	3817	0.365	0.33
	0.0 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00				

cousins (who share roughly 12.5 per cent of their genes) is weaker than that for parents and their offspring (who share roughly 50 per cent of theirs). The strongest correlation of all is for MZs. At first sight, these data suggest that heredity is a major influence on IQ test performance. However, as the genetic similarity between people increases, so does the similarity of their environments: parents and offspring usually live in the same households, whereas unrelated people don't. In other words, family resemblance studies *confound* genetic and environmental influences. In the case of comparisons between MZs and DZs, there's a unique problem regarding the role of environmental factors, namely the *equal environment assumption* (EEA).

CRITICAL DISCUSSION 41.2 The equal environment assumption (EEA)

- Within family resemblance studies as a whole, the MZ/DZ comparison is crucial. The greater concordance of MZs compared with same-sex DZs is taken to be the strongest evidence in favour of the genetic theory.
- This conclusion depends on the validity of the *equal environment assumption* (EEA) – that is, MZs and DZs experience (roughly) equal environments.
- But most people (including leading twin researchers) understand that MZs' physical and social environments are much more similar. This means that the higher concordance for MZs can tell us little about genetic influences on differences in intelligence (or any other psychological trait).
- However, supporters of the EEA (e.g. Shields, 1954; Kendler *et al.*, 1993; Scarr, 1968), while recognising that MZs *are* treated more similarly and experience more similar environments than DZs, claim that this is *caused by* their genetic similarity. In other words, twins 'create their own environment' (Plomin *et al.*, 1977).
- Joseph (2003) believes this is a 'heads I win, tails you lose' argument, which also rests on the further assumption that parents are readily able to change their behaviour and treatment of their twins based on environmentally caused factors (the twins' behaviour). Are adults that flexible? Wouldn't we expect their behaviour to be far *less* malleable than their children's?
- But even if the 'twins create their own environment' argument is valid, Joseph believes that the *reason* MZs experience more similar environments is completely *irrelevant*. He gives the hypothetical example of a twin study into possible genetic influences on lung cancer. Let's assume there's a genetic basis for the desire to smoke tobacco. Because of their greater genetic similarity, it's likely that MZs would be more concordant for cigarette smoking. According to Plomin *et al.*'s logic, since the tendency towards *smoking* is 'driven genetically', the higher MZ concordance for *lung cancer* is evidence of a genetic predisposition for lung cancer. This is clearly mistaken, because lung cancer could still be *completely* explained by exposure to tobacco smoke – an *environmental* event (Joseph, 2003).

Studies of separated twins

One way of overcoming the problem of family resemblance studies in general, and the EEA in particular, is to compare the IQs of MZs reared together in the same environments (MZsRT) with those raised separately in different environments (MZsRA). As Table 41.4 shows, MZsRT show a greater similarity in IQ scores than MZsRA. However, the fact that MZsRA are still more similar than same-sex DZsRT suggests a strong genetic influence (Bouchard *et al.*, 1990).

KEY STUDY 41.1 The Minnesota Study of Twins Reared Apart (MISTRA)

- This was started in 1979 by Bouchard and his colleagues at the University of Minnesota. Reports have been published since 1988.
- According to Bouchard (1984), each twin was given a Life History Interview, a Clinical Interview, a Sexual Life History Interview, a Life Stress Interview, a Child Rearing and Schooling Interview, and the Briggs Life History Questionnaire.
- As of 1998, Bouchard *et al.* have studied 71 pairs of MZsRA. They have been the subject of numerous articles, several books popularising the study of the influence of genetics on behaviour (*behaviour genetics research*), and TV programmes.
- A 1990 article compared MZsRA and MZsRT for physical variables, IQ and personality. Overall (combined) IQs on the WAIS (see page 713) showed correlations of 0.69 for MZsRA (48 pairs) and 0.88 for MZsRT (40 pairs). For personality, correlations were 0.49 for both groups. For other abilities, such as memory, the correlations are low or, as with spatial ability, inconsistent (Thompson *et al.*, 1991).
- Bouchard *et al.* concluded that psychological traits are strongly influenced by genetic factors. They were careful to test each twin separately and to have different testers administer the tests. They also vigorously recruited *all* twin pairs they became aware of, regardless of whether they were MZsRA or DZsRA.

ASK YOURSELF...

- Why do you think they took these precautions?

- Using different testers to test the twins separately ensured that the testers were 'blind' to the twins' identity – that is, they couldn't be (unconsciously) influenced by knowledge of the co-twin's score (*experimenter bias*) when testing the other co-twin. If they'd selected twin pairs *knowing* they were MZs or DZs, results could again have been biased, based on the assumption that MZs are psychologically more similar (*ascertainment bias:* Joseph, 2003).
- According to Bouchard & Loehlin (2001), only 'the most extreme sceptic' would dispute the finding that:

"...virtually all human psychological traits are influenced by genetic factors to a significant degree."



Barbara Herbert and Daphne Goodship, one of the pairs of (English) separated identical twins reunited through their participation in the Minnesota twin study

An evaluation of twin studies

According to Joseph (2003), despite the 'safeguards' described in Key Study 41.1, in many ways the MISTRA is methodologically *inferior* to earlier studies. These include Newman *et al.* (1937), Shields (1962), Juel-Nielsen (1965) and Burt (e.g. 1966), and they share many of the same methodological shortcomings as the MISTRA.

- 'Separated' twins often turn out not to have been reared separately at all. In Shields' and Juel-Nielsen's studies, some of the twins were raised in related branches of the parents' families, attended the same schools and/or played together (Farber, 1981; Horgan, 1993). When these are excluded from analysis in Shields's study, for example, the correlation decreases from 0.77 to 0.51. Moreover, even if the twins are separated at birth, they've shared the same environment of the mother's womb for nine months. Their identical prenatal experiences may account for the observed similarities in IQ (Howe, 1997). The MISTRA MZsRA were recruited partly on the basis of their pre-exiting knowledge of their co-twin.
- Studies of MZsRA are also *adoption studies,* and a critical assumption of all adoption studies is that children are placed *randomly* into available adoptive homes (see below). But when twins have to be separated, the agencies responsible for placing them generally try to match the respective families as closely as possible. Genetic inferences from such studies depend on the assumption that the twins' environments aren't systematically more similar than those of a group of randomly selected, biologically unrelated paired individuals (an *unequal environment assumption:* Joseph, 2003). When the environments are substantially

different, there are marked IQ differences between the twins (Newman *et al.*, 1937).

- In Newman *et al.*'s and Shields' studies, the experimenters knew which twins were identical and which had been separated. Participants in MISTRA were recruited by means of media appeals and 'self-referrals'. Kaprio (in Horgan, 1993) claims this has tended to attract people who enjoy publicity, and therefore constitute an *atypical sample* of MZsRA.
- Related to this is the fundamental question of whether MZs (whether reared together or apart) are representative of *people in general*. According to Joseph (2003), the only valid *control group* in a study involving MZsRA would be two randomly selected, biologically unrelated pairs of strangers matched on the same environmental variables shared by MZs. They are (by definition) exactly the same age, sex and (almost always) ethnicity, they're (usually) strikingly similar in appearance, which will probably elicit similar treatment, they're usually raised in the same socio-economic and cultural contexts, and so on. Plus, as we noted earlier, they've shared a womb for nine months before any of these post-natal factors begin to 'kick in'.
- Different studies have used different IQ tests, making comparisons between them difficult. Moreover, some of the tests used were inappropriate and/or not standardised on certain groups (see above).
- For a long time, the most widely cited and best-known studies of MZsRA were those reported by Burt (e.g. 1966), who found high correlations between the IQs of 53 pairs of twins supposedly reared in very different environments. After noticing several peculiarities in Burt's procedures and data, Kamin (1974) and Gillie (1976) questioned the genuineness of Burt's research. Even Burt's most loyal supporters have conceded that at least some of his data were fabricated (e.g. Hearnshaw, 1979).
- A problem unique to MISTRA is Bouchard *et al.*'s refusal to make the life history and tests score data available to other researchers (such as Kamin) for independent analysis. Yet during the 1980s, they provided information to journalists and others, which led to twins' stories appearing in leading US magazines and newspapers.

Adoption studies

Adopted children share half their genes but nothing of their environment with their biological parents, and they share at least some of their environment but none of their genes with their adoptive parents. One research methodology involves comparing the IQs of children adopted in infancy with those of their adoptive and biological parents.

ASK YOURSELF...

- Using this research methodology, what outcome would lend support to the genetic theory (i.e. correlations between whom would need to be greater)?

Support for the influence of genetic factors would be obtained if the correlation between the adopted children's IQ scores and those of their *biological* parents was stronger than that between the adopted children and their adoptive parents.

This is exactly what some studies have shown. Munsinger (1975) found that the average correlation between adopted children and their biological parents was 0.48, compared with 0.19 for adopted children and their adoptive parents. Also, by the end of adolescence, adopted children's IQs are correlated only weakly with their adoptive siblings, who share the same environments but are biologically unrelated (Plomin, 1988).

An evaluation of adoption studies

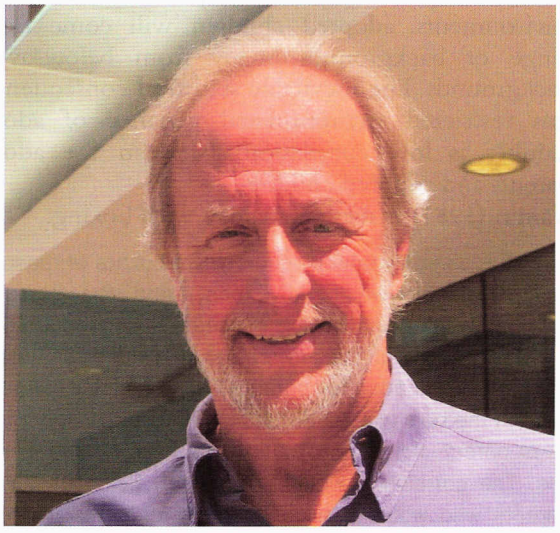
- This finding (that the adopted children's IQs tend to correlate more with their biological than their adoptive parents) seems to be contradicted by the separate finding that the IQs of working-class children reared in middle- or upper-class families typically rise by 12 to 14 points. In general, supporters of the genetic theory focus on the former, while environmentalists emphasise the latter.
- According to Joseph (2003), the higher correlations between adopted children and their biological parents is an artefact of sampling, and can be explained in terms of the 'restrictive variance' of adoptive families (Kamin, 1981). They are similar in socio-economic status and have been carefully screened by the adoption agencies. So, while most adoptive parents are of above-average intelligence and provide above-average environments, adopted children will come from a range of backgrounds, many from below-average backgrounds. The inevitable statistical consequence of this restricted environmental variance of adoptive families is low correlations between the adoptive parents and adopted children.
- Kamin (1981) makes an analogy with boxing:

> ... Fights can only take place between boxers of reasonably similar weight [weight divisions], and the correlation between weight and boxing success is consequently very low ... in terms of the environment provided for their children almost all adoptive parents – unlike biological parents – are in the heavyweight division. That would account for the lower parent–child IQ correlation observed in adoptive families. The correlation would presumably be much higher if parents who would provide poor environments wanted to, and were allowed to, adopt more often.

- Studies relating to the second finding concerning big increases in the IQs of working-class children are described in Key Study 41.2.

KEY STUDY 41.2 Adoption studies involving very different natural and adoptive parental environments (Capron & Duyme, 1989; Scarr & Weinberg, 1976; Schiff *et al.*, 1978)

- Scarr & Weinberg's (1976) 'transracial' study involved 101 white families, above average in intelligence, income and social class, who adopted black children. If genetics were the only factor influencing the development of measured intelligence, then the average IQ of the adopted children should have been more or less what it was before they were adopted. In fact, their average IQ was 106 following adoption, compared with an average of 90 before adoption.
- Scarr and Weinberg's data also indicated that children adopted *early* (within their first year) have higher IQs than those adopted later. So, when adoptive homes provide a superior intellectual climate, they can have a substantial effect on the development of measured intelligence.
- But when the economic status of the biological and adoptive parents is roughly equal, the IQs of adopted children tend to be much more similar to those of the biological parents than the adoptive parents (Scarr & Weinberg, 1978).
- Schiff *et al.* (1978) studied a group of economically deprived French mothers who'd given up one baby for adoption while retaining at least one other child. The average IQ of the children adopted into middle class homes was 110, while that of the siblings who remained with the biological mother was 95.
- Similarly, French adoptees raised by parents of high socio-economic status (SES) were around 12 IQ points higher than adoptees raised by parents of low SES – irrespective of their biological parents' SES (Capron & Duyme, 1989).



Robert Plomin

- According to Schiff & Lewontin (1986):

> ... adopted children, even though they may correlate *individually* with their biological parents more than with their adoptive parents are, in fact, more similar *as a group* to the adoptive parents than to their biological ones.

- Plomin and DeFries's Colorado Adoption Project (begun in 1975) is an ongoing study involving over 200 adopted children. By middle childhood, natural (birth) mothers and their children who were adopted were just as similar as control parents and their children on measures of both verbal and spatial ability. In contrast, the adoptees' scores don't resemble their adoptive parents' at all.
- According to Plomin & DeFries (1998), these results are consistent with a growing body of evidence suggesting that the *shared family environment* doesn't contribute to similarities between family members:

> Rather, family resemblance on such measures [verbal and spatial ability] seems to be controlled almost entirely by genetics, and environmental factors often end up making family members different, not the same.

Environmental influences

While not denying the role of genetic factors, those who believe that the environment influences IQ identify a whole range of (pre- and postnatal) environmental factors.

Prenatal environmental influences

Prenatal non-genetic factors account for the largest proportion of biologically caused learning difficulties and lowered IQ. Known prenatal *teratogens* (any agent causing abnormalities in the developing foetus) include certain infections (e.g. maternal rubella), toxic chemicals in the mother's body (e.g. drugs like heroin, cocaine, and alcohol: see Box 40.7, page 698), radiation, and pollutants. Other toxins are produced by the mother's own faulty metabolism, or as a result of incompatibility

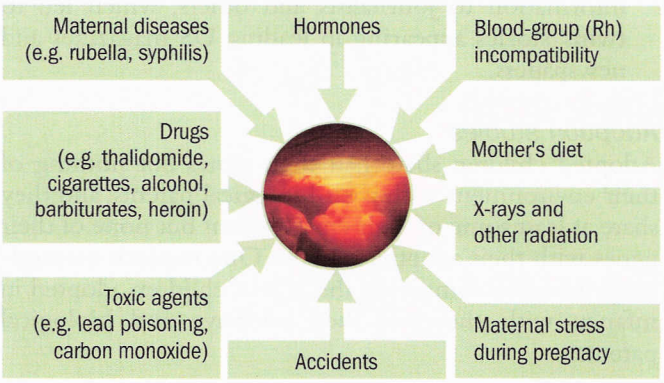


Figure 41.5 The prenatal, biological environment

between the rhesus factors in the mother's blood and that of her developing foetus (Frude, 1998).

Anxiety has also been found to lead to low birth-weight babies (due to impaired blood flow to the uterus: Teixeira, 1999). In turn, low birth-weight is associated with neurological impairment, lower IQ, and greater problems in school (e.g. Hack *et al.*, 1994).

Postnatal environmental influences

KEY STUDY 41.3 Romanian orphans (Rutter *et al.*, 1998)

- Rutter *et al.* studied a large sample of 111 institutionalised Romanian children adopted into English families within 24 months of birth. The children had experienced extreme privation, both physically and psychologically, and were all severely malnourished.
- Compared with 42 English adoptees, the Romanian children showed developmental deficiencies in weight, height, and head circumference, as well as deficits in reaching developmental milestones.
- However, by age four, they showed considerable physical and developmental catch-up (see Chapter 32), and 'spectacular' cognitive catch-up. Those who were adopted before six months had a clear advantage over the later-adopted children.
- Although their data don't allow a clear differentiation to be made, Rutter *et al.* conclude that the effects of malnutrition *don't* appear to be independent of the effects of the psychological privation.
- By age six, they'd maintained their progress, but there was no evidence of any further recovery (O'Connor *et al.*, 2000).

Other studies suggest that periodic or chronic subnutrition can adversely affect cognitive development in its own right. For example, when children in developing countries are given high-quality nutritional supplements in infancy and early childhood, their later IQ and vocabulary scores are higher than those of non-supplemented children (Pollitt & Gorman, 1994).

Environmental enrichment studies

Skeels (1966) followed up a group of children removed from orphanages into more stimulating environments 20 years earlier (Skeels & Dye, 1939). Most of those raised by foster mothers showed significant improvements in their IQs, whereas those raised in the orphanage had dropped out of high school, or were still institutionalised or not self-supporting. Other studies of children raised in orphanages have also shown that environmental enrichment can have beneficial effects. The Rutter *et al.* (1998) study of Romanian orphans is a striking example.

Hunt (1961) and Bloom (1964) argued that intelligence isn't a fixed attribute but depends on, and can be



Children at the Bloomingdale Day Center Headstart Program, New York City

increased by, experience. This led to President Johnson, as part of his 'war against poverty', initiating a number of *intervention programmes,* based on the assumption that intelligence could be increased through special training. The first of these was *Operation Headstart* (1965).

Operation Headstart (OH) was an ambitious compensatory programme designed to give culturally disadvantaged preschool children enriched opportunities in early life. It began as an eight-week summer programme, and shortly afterwards became a full year's preschool project. In 1967, two additional Follow Through programmes were initiated, in an attempt to involve parents and members of the wider community. Early findings indicated that there were significant short-term gains for the children, and this generated much optimism. But when IQ gains did occur, they disappeared within a couple of years, and the children's educational improvement was minimal.

KEY STUDY 41.4 The Milwaukee Project (Heber *et al.*, 1968)

- The Milwaukee Project is perhaps the most publicised of all the early intervention studies (Clarke & Clarke, 2000).
- Heber *et al.* found that mothers (living in the Milwaukee slum) with IQs under 80 (less than half the total of all mothers) accounted for almost 80 per cent of children with similarly low IQs.
- An intensive intervention programme involving 40 poor, mostly black families, began with the birth of their babies, and continued until the children started school at age six. 20 of the women were given job training and sent to school (the 'experimental group'), while the other 20 (the 'control group') received no job training or special education.

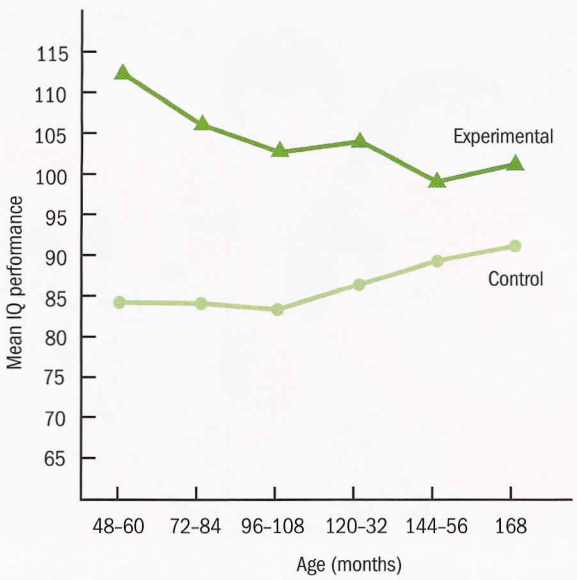


Figure 41.5 IQ performance with increasing age of severely disadvantaged children participating in a broad-ranging intensive intervention programme in the preschool years (data from Garber, 1988 and taken from Figure 6.5 (pp. 212–213) from *Developing Minds: Challenge and Continuity Across the Life Span*, by Michael Rutter and Marjorie Rutter (Penguin Books, 1992), copyright © Michael and Marjorie Rutter, 1992)

- At the point of starting school, the 'experimental group' children had an average IQ score of 120.7, compared with 87.2 for the control group. By age ten, these were 104 and 86 respectively. Educationally too, the experimental group was clearly superior.
- But after ten, both groups' performance fell below national norms, and over time the experimental group declined first to the lower levels of the city of Milwaukee, then still lower to the level of inner-city schools. When assessed at 12–14, mean IQs for the experimental and control groups were 100 and 90, respectively.
- Like OH, the Milwaukee project showed that vigorous and relatively prolonged intervention can make a difference to severely disadvantaged children's cognitive performances. But much of the gain is lost in the years following the end of the programme (Rutter & Rutter, 1992).

An evaluation of early intervention studies

- As the Milwaukee project was one of the most ambitious preschool programmes ever attempted, it raises the fundamental question of whether there can be any lasting benefits unless early intervention radically alters the whole context of family and other social and school relationships. Once the programme ended, all the adversities associated with poor social conditions and poor schooling provided an antidote to the earlier intervention (Clarke & Clarke, 2000).
- Hunt (1969) argued that OH was *inappropriate* to the children's needs, and didn't provide them with the skills they'd failed to develop at home during their first four years (and which are developed by most middle-class children). Also, IQ changes were the main outcome measure used to evaluate its effectiveness. Measures which reflect social competence, adaptability, and emotional health are much better criteria of success (Weinberg, 1989). According to Bee (2000), because children aren't randomly allocated to OH or non-OH, interpreting the differences becomes very difficult.
- However, the criticisms were apparently premature, and several reviews looking at OH's *long-term effects* have concluded that the programme has brought about lasting changes in children's cognitive abilities The greatest gains are shown by children with the lowest initial IQs. There's also a *sleeper effect* at work; that is, the impact of intervention programmes is *cumulative* (Collins, 1983).

Box 41.6 The longer-term effects of OH and other intervention programmes

Compared with non-participants, children enrolled in intervention programmes:

- will usually show gains of about 10 IQ points; these gains occur while the programme's running, but then fade and disappear within the early years of elementary (primary) school (Zigler & Styfco, 1993)
- are less likely to be placed in special education/remedial classes, are slightly less likely to repeat a grade, and slightly more likely to graduate from high school (Darlington, 1991; Haskins, 1989)
- tend to score higher on tests of reading, language and maths, with this 'achievement gap' widening between the ages 6 to 14 (Collins, 1983)
- show better school adjustment than their peers (Zigler & Styfco, 1993)
- are more likely to want to succeed academically (Collins, 1983).

- According to Bee (2000), although enrolled children don't necessarily test much higher than non-enrolled children, they function better in school. When some kind of supportive intervention continues into the early years of elementary school, and when the school is of a reasonable quality, the beneficial effects on school performance are even more evident (e.g. as in the Abcedarian Project: Ramey & Ramey, 1992).
- Howe (1997, 1998) believes that it would be inconceivable if the improvements in IQ produced by intervention programmes *didn't* fade. In the case of OH schemes, for example, the urban environments where they've been set up have often involved squalor, addiction, violence, unemployment, poor housing and inadequate parenting. Together, these

negative influences work to restrict a child's opportunities to practise and maintain recently acquired mental skills. This makes it highly likely that they'll fade (see Key Study 41.4).

◎ For Howe, evidence of fading simply confirms that intelligence is changeable. Similarly, even if the vast majority of intervention studies had failed to raise children's IQs at all, this wouldn't be conclusive evidence that intelligence was fixed. Before 1972, the total amount of time a child would have spent in a OH programme was 180 hours. This rose to 720 hours after 1972. But when compared with real-life exposure to language of children from different social class backgrounds, 720 hours represents a rather modest intervention:

> Regarded in that light, the finding that educational intervention programmes ... have nevertheless yielded large ... IQ gains would appear to provide rather conclusive evidence that IQ scores are highly changeable ... (Howe, 1998)

Hothousing

ASK YOURSELF...

- Do you think it's possible, or indeed desirable, *deliberately* to speed up children's development?

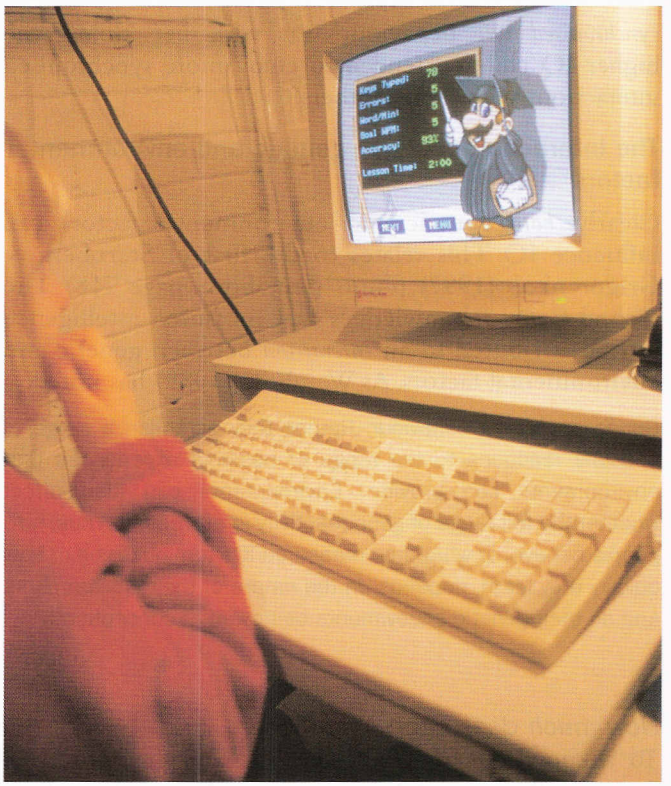
Some psychologists believe that, while accelerated progress can occur in some areas, other skills (such as language) are essentially *preprogrammed* and not much affected by early experience (Howe, 1995; see Chapter 19).

Parents determined to make their child into a genius or prodigy can pressurise it with their high expectations, and by sending it to an organisation established to serve 'gifted children'. But there's no convincing evidence that such organisations are actually effective (Llewellyn-Smith, 1996). Also, children who experience intensive hothousing regimes may miss other experiences which, while not necessarily 'educational', are important for healthy development (Howe, 1995). A child who successfully completes a mathematics degree before the age of 14 has clearly developed a useful skill. But s/he might not have developed important social skills (such as the ability to make friends), because of an inability to join in 'normal' children's conversations (see Chapter 40).

Box 41.7 Dimensions of family interaction affecting cognitive development

According to Bee (2000), how infants and young children are treated can make a real difference to their cognitive development, regardless of whether they come from poor working-class or middle-class families. These differences in early experience have been the focus of most of the research into environmental effects on IQ. Parents of higher-IQ children, or whose IQs show an increase over time, tend to:

- provide interesting and complex physical environments, including play materials that are appropriate for the children's ages and developmental levels
- be emotionally responsive and involved with the children: smiling when the children smile, answering their questions, and generally responding to their cues
- talk to the children often, using language that's diverse, descriptively rich and accurate
- operate within the children's *zone of proximal development* (ZPD: see Chapter 34, page 594) during play and interaction
- avoid excessive restrictiveness, punitiveness, or control, providing opportunities for the children to ask questions, as opposed to giving commands
- expect their children to do well and develop rapidly, especially academically.



Computers can help make a child's environment more stimulating and challenging

A study relevant to Bee's second dimension was conducted by Crandell & Hobson (1999), involving 36 middle-class mothers and their three-year-olds. Children of securely attached mothers (based on a version of Main *et al.*'s, 1985, *adult attachment interview:* see Chapter 32) scored 19 points higher on the Stanford–Binet test compared with children of insecure mothers. In turn, a mother's attachment type was related to how well



Ruth Lawrence, who graduated with a first class degree from Oxford at the age of 13

synchronised her behaviour was with her child's: the higher-IQ children tended to enjoy more synchronised interactions with their mothers.

The interaction between genetic and environmental factors

Clearly, *both* genetic and environmental factors can influence IQ. This relates to the first of Sternberg & Grigorenko's (1997) points (see above, page 718). The second point acknowledges that measured intelligence can be attributed to an *interaction* between genetic and environmental factors. As Weinberg (1989) has noted:

> Genes do not fix behaviour. Rather, they establish a range of possible reactions to the range of possible experiences that environments can provide. Environments can also affect whether the full range of gene reactivity is expressed. Thus, how people behave, or what their measured IQs turn out to be or how quickly they learn, depends on the nature of their environments and on their genetic endowments bestowed at conception.

How much does each contribute?

To acknowledge that both genetic and environmental factors influence intelligence raises the question: how much does each contribute? *Behaviour genetics* attempt to determine the *relative* contributions made by genetic and environmental factors, and *heritability* refers to the mathematical estimate of how much variability in a particular trait is a result of genetic variability (Carlson, 1988). Eye colour, for example, is affected almost entirely by heredity and little, if at all, by environmental factors. As a result, the heritability of eye colour is close to 100 per cent. Early *heritability estimates* for IQ of 80 per cent (Jensen, 1969) have been revised more recently down to around 50–60 per cent (Bouchard & Segal, 1988).

What does heritability really mean?

- To say that the heritability of measured intelligence is 50–60 per cent *doesn't* mean that 50–60 per cent of measured intelligence is determined by genetic factors. This is because heritability estimates apply only to a particular *population* or group of people at a particular time – *not* to a single individual. So, of the variation in intelligence test scores within a group of people, about 50–60 per cent can be attributed to genetic factors (assuming Bouchard and Segal's estimate is correct).
- However, heritability describes what *is* rather than what *could be* (Pike & Plomin, 1999). If environmental factors within a population change (e.g. educational opportunities), then the relative impact of genes and environment will change. Even for a highly heritable trait such as height, environmental changes could make a large difference. Indeed, the huge increase in height during the twentieth century is almost certainly the result of improved diet (Pike & Plomin, 1999). As far as intelligence is concerned, heritability of 50 per cent means that environmental factors account for as much variance as genes do (Plomin & DeFries, 1998: see Chapter 50).

CRITICAL DISCUSSION 41.3 Heritability – a measure of inheritance or inherently misleading? (Joseph, 2003)

- Joseph argues that 'heritability' is perhaps the most misunderstood and misguided concept in the psychological (and psychiatric) literature.
- The calculation of a heritability estimate is based on the assumption that genes and environment *don't* interact; but clearly they do (and most behaviour geneticists would agree).
- For example, in the USA and UK, a person who is genetically coded to have dark pigmentation will usually experience a far different (inferior) environment compared with someone born with light skin, and four-feet-tall adult males will experience different environments than six-foot males.
- Even if the concept of heritability were valid and important for humans, the fact remains that heritability estimates are derived from family resemblance, twin and adoption studies, with all their associated problems and limitations (see text above).

How do heredity and environment contribute?

If we accept that genetic and environmental factors interact, then the focus shifts from how much they contribute to *how* they exert their influence. An example of how this might occur is *cumulative deficit*. Dozens of studies show that children from poor families, or families where the parents are relatively uneducated, have lower IQ scores than those from middle-class families (Bee, 2000). This could reflect either genetic or environmental factors, or both.

However, these social-class differences aren't found before the age of two-and-a-half to three, after which they widen steadily. This suggests that the longer a child lives in poverty, the more negative the effects on IQ test scores and other measures of cognitive functioning become (Duncan, 1993; Smith *et al.*, 1997). Hence, the effects of any genetic differences that may be involved to begin with are accentuated by environmental factors, especially poverty. Poverty has a significant effect on children's IQ scores over and above what the parents' own genes may have contributed (Bee, 2000).

The race and IQ debate

The false assumption that *between-group differences* can be inferred from *within-group differences* (see Box 41.8) forms a major part of the *hereditarian fallacy* (Gould, 1981). In turn, the fallacy is central to the claim that certain racial groups are genetically inferior to others.

Box 41.8 Why between-group differences cannot be inferred from within-group differences

- Lewontin (1976) asks us to consider 10 tomato plants grown in poor soil (see Figure 41.6 below). Their different heights are the result of genetic factors. If the same 10 plants were grown in fertile soil, differences in height would again be due to genetic factors.
- But the difference in the average height of the plants grown in poor and fertile soil is due to the *environmental* differences of the soils.
- So, even when the heritability of a trait is high *within* a particular group, differences in that trait *between* groups may have environmental causes (Myers, 1990).

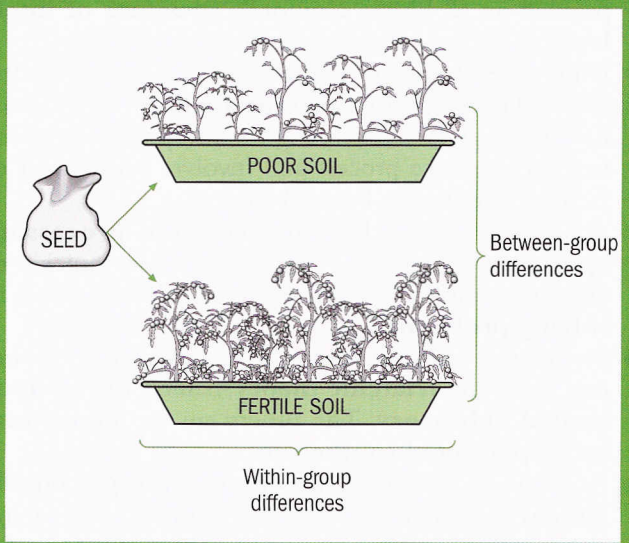


Figure 41.6 Although we can account for within-group differences in terms of genetic factors, between-group differences may be caused by environmental factors (i.e. poor/fertile soil)

Jensen (1969) published an article called 'How much can we boost IQ and scholastic achievement?', in which he reviewed all the literature which compared black and white IQ scores. The basic finding, that 'On average, Negroes test about one standard deviation (15 IQ points) below the average of the white population in IQ' is not itself a matter of dispute. What's controversial is Jensen's explanation of these findings:

> Genetic factors are strongly implicated in the average Negro–white intelligence differences. The preponderance of the evidence is, in my opinion, less consistent with a strictly environmental hypothesis than with a genetic hypothesis ... (Jensen, 1969)

Others, including Eysenck (1971) and Herrnstein (1971), agree with Jensen.

Some of the evidence on which Jensen based his genetic theory was the apparent failure of compensatory preschool programmes such as OH (see above). Perhaps the most fundamental criticism of Jensen is that he bases his view of black–white differences (between-group differences) on the heritability estimate (of 80:20) derived from studies of the white population (and so is based on within-group differences).

ASK YOURSELF...

- If we apply the argument in Box 41.8 to Jensen's (1969) claim that 80 per cent of the differences between blacks and whites on IQ tests are due to blacks' 'genetic inferiority', then his claim must be rejected. How else could you explain black–white differences?

Explaining race differences

Environmental factors which could account for such differences include *bias* in the tests used to measure intelligence. According to Segall *et al.* (1999), IQ tests are biased against those (such as blacks and other minorities) whose cultural backgrounds differ from that of the test's normative sample (whites). This relates to the earlier discussion of *culture-fair/culture-free* tests (see pages 717–718).

CRITICAL DISCUSSION 41.4 The political and racist nature of IQ tests

- According to Richardson (1998), the sex difference that was found prior to the 1937 Stanford–Binet test (see above) was accepted by Terman and Merrill as an undesirable artefact of the test items. The revision removed the sex differences because this was both possible and desirable.
- But what about race (and social class) differences? While these, too, *could* be eliminated, the reason they haven't been is that they're seen as real differences

existing in nature. In other words, the belief that races (and classes) are genetically inferior is built into most standardised IQ tests (Joseph, 2003). As Joseph says:

.. Items on standardised IQ tests do not fall from the sky; they are carefully selected (out of a large pool of potential items) to produce results desired by the test creator ...

- According to Sweet (2004):

... IQ tests remain a useful tool for racist ideologues ... Go to the website of Richard Lynn, Professor Emeritus at the University of Ulster – a man who believes ... not in 'genocide' but in the 'phasing out' of 'incompetent races' – and you'll find reams of ... racist pseudoscience ... His latest article ... 'presents new evidence ... [which] supports the theory that the proportion of white ancestry is a determinant of the intelligence of African-Americans ...'

It's perfectly possible, then, that individual differences in IQ (within-group differences) are heavily influenced by genetic factors, while group differences (between-group differences) are largely or entirely the result of environmental factors (such as test bias and other forms of discrimination). Jensen's response to this is to appeal to studies in which environmental factors are controlled.

For example, Shuey (1966) compared middle- and working-class blacks and whites and found the same average 15-point difference. But isn't there more to 'environment' than social class (measured largely in terms of occupation and income)? Given their history of slavery and continuing prejudice and discrimination, surely the experiences of working-class and middle-class blacks cannot be considered equivalent to that of their white counterparts. According to Bodmer (1972):

Measuring the environment only by standard socio-economic parameters is ... like trying to assess the character of an individual by his height, weight and eye colour.

CONCLUSIONS

By the late 1980s, the size of the black–white IQ gap had significantly narrowed – by about half to 7–8 points (Williams & Ceci, 1997) – although this trend didn't seem to continue into the 1990s. Closure of the gap seems to reflect increases in educational spending throughout the twentieth century, increased educational attainment by black parents, and reduction in the size of black families (Price & Crapo, 1999).

As important as these socio-economic factors are, both genetic and environmental factors can influence the development of IQ. These factors are intertwined, not separate. According to Segall *et al.* (1999):

... no behaviour is determined solely by culture or solely by biology. The two major classes of behavioural determinants always operate in such an interactive manner that they are difficult to separate. For intelligence, as for any other human characteristic, biological factors provide a broad range of potential and the outer limits or constraints of that potential, but experience has much room to operate within those limits.

According to Moghaddam (2002), intelligence isn't a single entity, but

... a social construct, with a multitude of different manifestations that can, and often do vary across groups and cultures ... As an alternative to viewing intelligence as a performance capacity – something fixed, inherited, and independent of context – we should view it as performance style, a way of doing things (solving problems) that is intimately related to context ...

CHAPTER SUMMARY

- Piaget's **biological** definition of intelligence sees it as related to **adaptation to the environment**. In contrast with his emphasis on the **qualitative** aspects of intelligence, the **psychometric approach** is concerned with **individual differences** in measured intelligence (**quantitative** aspects).
- According to Spearman's **two-factor theory**, every intellectual activity involves both a general factor (*g*) and a specific factor (*s*). Burt and Vernon's **hierarchical model** extended this by identifying **major** and **minor group factors**.
- Thurstone identified seven distinct **primary mental abilities** (PMAs). Instead of ranking individuals in terms of general intelligence, individuals should be profiled on all PMAs. Guilford's '**structure of intellect**' model also totally rejects the idea of *g*.
- Differences between British and American models reflect different forms of **factor analysis** (FA). Factors have to be given a psychological interpretation, which isn't an objective process and involves **reification** of factors once they've been labelled.
- According to the **information-processing approach**, people differ according to how quickly or efficiently they move through the steps involved in **solving problems**.
- Sternberg's information-processing model comprises one part of his **triarchic theory**, namely the **componential subtheory**. The others are the **contextual** and **experiential subtheories**.
- According to Gardner's **theory of multiple intelligences**, intelligence is a collection of separate, independent but interacting **systems**. Criteria for distinguishing an independent intelligence include potential isolation by brain damage, an identifiable core operation, and the existence of idiots savants and other exceptional individuals.

- **Individual tests** of intelligence are used mainly as **diagnostic** tests in clinical settings, while **group tests** are used mainly for educational **selection** and **research**.
- Although all tests now use a **deviation IQ**, standard deviations (SDs) can still differ between tests. While intelligence is a **psychological** concept, IQ is a **statistical** concept.
- Both the **Stanford–Binet** and **Wechsler** scales were originally **standardised** on whites only, and the restandardisation of the former so as to equalise the mean scores of women and men reveals the **ideological significance** of IQ. This adjustment changes the test's **predictive validity** (or **efficiency**).
- A strictly **culture-free** test is impossible, while a **culture-fair** test is possible but very difficult to construct in practice. The very concept of intelligence is cultural, and no test can assess the meaning that the experience of taking an intelligence test has for the testee.
- Although several studies show high **stability coefficients** for IQ, these obscure sometimes very large individual differences, and there are many short-term fluctuations.
- As people's **genetic similarity** increases, generally so does the **similarity of their environments**. This can be overcome by comparing the IQs of MZs reared together (MZsRT) with those raised separately (MZsRA).
- MZsRA are still more similar than same-sex DZs reared together, suggesting a strong genetic influence. However, studies of MZsRA have been criticised on several important methodological grounds.
- Further support for the influence of genetic factors comes from **adoption studies**. But when children from disadvantaged parents are adopted into high socioeconomic families, substantial gains in IQ can occur.
- **Intervention programmes** started with Operation Headstart (OH). Early findings indicated significant short-term IQ gains, but these were short-lived and the educational improvements were minimal. Similar results were reported for the Milwaukee Project.
- Studies of the longer-term effects have concluded that OH has lasting cognitive benefits, especially for those whose IQ scores were initially the lowest. There's also a **sleeper effect**.
- **Heritability** refers to how much of the variability in a particular trait is due to genetic variability **within** a particular group/population. Even when heritability is high, differences in that trait **between** groups may have **environmental** causes.
- One assumption involved in the **hereditarian fallacy** is that heritability estimates based on **within-group differences** (such as are found in twin studies) can be applied to **between-group differences** (such as between blacks and whites).
- Trying to equate the environments of blacks and whites in terms of social class is invalid, and IQ tests are **racially biased**.

Links with other topics/chapters

- Piaget's view of intelligence as adaptation to the environment underlies his whole theory of *cognitive development* (Chapter 34).
- Using the noun 'intelligence' rather than the adjective 'intelligent' is an example of *reification* – that is, discussing some abstract concept (or *hypothetical construct*) as if it were *real*. Psychology as a discipline often falls into this trap, because so much of its subject matter ('the mind') can only be *inferred* from observable behaviour (Chapter 3). One of the aims of *social constructionism* is to expose and highlight examples of reification (Chapter 2).
- Factor analysis is just as important – and controversial – in relation to theories of *personality* (Chapter 42).
- The distinction between fluid and crystallised intelligence is crucial for understanding *cognitive changes in old age* (Chapter 39).
- The information-processing approach represents a major alternative to Piaget's theory of *cognitive development* (Chapter 34).
- The ability to deal with novelty (as in Sternberg's experiential subtheory) is a characteristic of *gifted children* (Chapter 40).
- If definitions of intelligence differ, then IQ is an unwarranted *reduction* of intelligence (something very diverse and complex) to a single number (Chapter 49).
- In relation to the equal environment assumption, the claim that twins create their own environment refers to *reactive gene–environment correlation* (Chapter 50).
- Bouchard *et al.* released selected information to journalists concerning separated MZs who'd signed an *informed consent agreement*. The researchers promised *not* to divulge information that could be traced to specific twin pairs, thus breaching the *confidentiality* principle (Chapter 48).
- The distinction between *shared* and *non-shared environments* illustrates the *interaction* between *genetic* and *environmental factors* (Chapter 50).
- Molecular genetic research involves the search 'for' actual genes responsible for human characteristics and abilities, such as intelligence and *schizophrenia* (Chapter 44). This corresponds to what Rose (1997) calls *reductionism as ideology* (Chapter 49).
- *Behaviour genetics* is central to the *nature–nurture debate* (Chapter 50).
- Cumulative deficit is one of many examples of *gene–environment interaction* (Chapter 50).
- The charge that IQ tests are biased against blacks and other minorities is related to the *emic–etic distinction* (Chapter 47).

Classifying theories of personality
Nomothetic versus idiographic approaches
Allport's trait theory
Does the wholly unique individual exist?
Is a science of unique individuals possible?
Traits vs situations
The consistency controversy
The psychometric approach
Factor analysis
Eysenck's type theory
What are 'types'?
Extroversion (E), neuroticism (N) and psychoticism (P)
Personality questionnaires
The biological basis of personality
Drugs and personality
Personality and conditionability
Cattell's trait theory
Differences between Cattell and Eysenck
Single- and multi-trait theories, and the 'big five'
An evaluation of the 'big five'
Kelly's personal construct theory
Man the scientist
Constructive alternativism
The repertory grid technique
An evaluation of PCT
Humanistic theories
Rogers' self theory
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Psychodynamic theories
Freud's psychoanalytic theory
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42

PERSONALITY



INTRODUCTION AND OVERVIEW

However different they may be in other respects, most personality theories share the basic assumption that personality is something that 'belongs' to the individual: 'the appropriate unit of analysis for personality psychology is the person' (Hampson, 1995).

To the extent that each of us 'has' a personality that's stable and relatively permanent, our behaviour will be consistent from one situation to another. An alternative view is that behaviour is largely determined by situational factors and that it will vary considerably across situations. This is referred to as the *trait versus situation debate* or the *consistency controversy.*

Personality theorists differ with respect to whether they're trying to compare individuals in terms of a specified number of traits or dimensions common to everyone (the *nomothetic approach*), or trying to identify individuals' unique characteristics and qualities (the *idiographic approach*).

According to the *constructionist approach* (Hampson, 1995), personality is constructed, in the course of social interaction, from three elements: a person's *self-presentation* (the actor: see Chapter 22), the *perception* of this presentation by an *audience* (the observer: see Chapter 22), and *self-awareness* (the self-observer: see Chapter 33). To this extent, personality isn't merely an abstraction which helps to explain people's behaviour (it's not something people 'have'), but it's to do with how we relate to other people and deal with the world in general.

CLASSIFYING THEORIES OF PERSONALITY

ASK YOURSELF...
- Try to define 'personality'.

If we wish to identify some of the dimensions along which various theories differ, then a useful definition of personality would be:

... those relatively stable and enduring aspects of individuals which distinguish them from other people, making them unique, but which at the same time allow people to be compared with each other.

This definition brings into focus two key questions.

- Does personality consist of *permanent traits* or characteristics?
- Is the study of personality the study of *unique individuals,* or is it aimed at comparing individuals and discovering the factors which constitute *personality in general?*

Psychologists who answer 'yes' to the first question, and who are interested in personality in general, belong to the *psychometric tradition* (*type* and *trait theorists*). The major figures are Eysenck and Cattell. They use personality questionnaires and the results from these are analysed using *factor analysis* (FA): see Chapter 41. In trying to establish factors in terms of which everyone can be compared, they adopt a *nomothetic approach.*

Psychologists who believe in the uniqueness of every individual adopt the *idiographic approach,* but beyond this it's difficult to say what else they have in common. For example, they may or may not see personality as permanent, or may differ as to how much or what kinds of change in personality are possible. But they're concerned with the *whole person,* whereas psychometric theorists want to rank or order individuals with respect to particular aspects of personality. Idiographic theorists include Allport, Kelly (whose *personal construct theory* isn't so much a theory of personality as a total psychology), and the *humanistic* psychologists Maslow and Rogers. Humanistic theories share a concern for the characteristics which make us distinctively human, including our experience of ourselves as people.

The *psychodynamic* theories of Freud and Jung are clearly idiographic: they're based on case studies of patients in the clinical context of psychotherapy and aren't concerned with measuring personality. However, they're also concerned with the nature of personality and try to account for individual differences. For example, Jung was the first to distinguish between introverts and

Table 42.1 A classification of personality theories

	Behaviour seen as consistent due to enduring personality traits. Change unlikely or impossible.	**Behaviour seen as variable due to the influence of situational factors. Personality change is possible.**
	Psychodynamic theories e.g. Freud, Jung, Adler and Erikson	
Nomothetic	Type and trait theories e.g. Eysenck and Cattell	'Situationism' e.g. Mischel
	Interactionism e.g. Bowers	
Idiographic	Allport's trait theory	Humanistic theories e.g. Rogers and Maslow
	Kelly's personal construct theory	

extroverts, which Eysenck later measured in his personality questionnaires. These theorists all allow for the possibility of personality change, primarily through psychotherapy.

NOMOTHETIC VERSUS IDIOGRAPHIC APPROACHES

ASK YOURSELF...

- Do you believe that every person is unique, or are we all basically the same, differing only in the degree to which we display certain tendencies or characteristics?

According to Kluckhohn & Murray (1953):

> Every man is in certain respects like all other men, like some other men and like no other men ...

What we have in common with *all* other human beings is the subject of experimental or 'general' psychology, which includes the study of cognitive and physiological processes, and learning. Much of developmental and social psychology is also concerned with discovering 'universal norms' which apply equally to all individuals.

What we have in common with *some* other human beings is examined through the study of *individual differences.* Personality differences represent one kind of *group norm,* others being age, gender, ethnic and cultural background, and intelligence. It's the study of 'how and how much a particular individual is similar to or differs from others' (Shackleton & Fletcher, 1984) which constitutes the factor-analytic/psychometric approach. As we've seen, this is also a nomothetic approach.

Finally, what we have in common with *no* other human being is the qualities that make us unique. This is the idiographic approach, which attempts to discover *individual/idiosyncratic norms.*

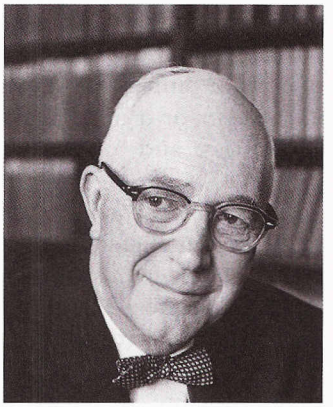
Allport's trait theory

Allport (1961) defined personality as:

> The dynamic organisation within the individual of those psychophysical systems that determine his characteristic behaviour and thoughts.

Allport & Odbert (1936) found over 18,000 terms describing personal characteristics and, even after omitting evaluative terms and transient states, there remained 4–5000. Allport believed that this large number of 'trait words' could be divided into just two basic kinds:

1. *common traits:* basic modes of adjustment applicable to all members of a particular cultural, ethnic, or linguistic background. For example, since we must all interact in a competitive world, we must each develop our own most suitable level of aggression. Each of us can be placed somewhere along a scale of aggressiveness. Common traits are the subject matter of the *nomothetic* approach
2. *individual traits:* a unique set of personal dispositions and ways of organising the world, based on life experiences. They're not dimensions which can be applied to all people. They cannot be measured by a standardised test, and can be discovered only by the careful and detailed study of individuals. Individual traits are the subject matter of the *idiographic* approach. Individual traits can take one of three forms: *cardinal, central,* or *secondary.*



Gordon W. Allport (1897–1967) (UPI/Bettmann Archive)

Box 42.1 Three kinds of individual traits

- **Cardinal traits** are so all-pervading that they dictate and direct almost all of an individual's behaviour, such as someone who's consumed by greed, ambition or lust. However, such traits are quite rare, and most people don't have one predominant trait.
- **Central traits** are the basic building blocks which make up the core of personality and which constitute the individual's characteristic ways of dealing with the world (e.g. honest, loving, happy-go-lucky). A surprisingly small number of these is usually sufficient to capture the essence of a person.
- **Secondary traits** are less consistent and influential than central traits, and refer to tastes, preferences, political persuasions, reactions to particular situations, and so on.

Individual traits are peculiar (idiosyncratic) to each person in at least three senses:

1. a trait that's central for one person may only be secondary for another person, and irrelevant for a third. What makes a trait central or secondary is determined not by what it is, but by how often and how strongly it influences the person's behaviour (Carver & Scheier, 1992)
2. some traits are possessed by only one person. Indeed, there may be as many separate traits as there are people
3. even if two different people are given, for convenience, the same descriptive label (such as 'helpful'), it

may not be used in the same way to describe both individuals and, to that extent, it's not the same trait. For Allport (1961), since personality dispositions reflect the subtle variations that distinguish a particular individual from all others, they must often be described at length, e.g. 'Little Susan has a peculiar anxious helpfulness all her own', instead of by a single label ('helpful').

This makes it very difficult to compare people:

> [Any given individual] is a unique creation of the forces of nature. There was never a person just like him and there never will be again ... (Allport, 1961)

Comparing people in terms of a specified number of traits or dimensions is precisely what the nomothetic approach involves: traits have the same *psychological meaning* for everyone, so that people differ only in the extent to which each trait is present. For example, Eysenck maintains that everyone will score somewhere on the extroversion (E) scale, and the difference between individuals is one of degree only (i.e. a *quantitative difference*).

For Allport (1961), people can be compared only in terms of common traits, which at best provide only a rough approximation to any particular personality. The nomothetic approach can only portray human personality in an oversimplified way: even the traits that people apparently share with one another will always differ from individual to individual.

Does the wholly unique individual exist?

Holt (1967) argues that the idiographic–nomothetic issue is based on a *false dichotomy*. All description involves some degree of generalisation, so that to imagine we can describe an individual in terms which make no reference to any other individual is a fallacy. To describe an individual, we must already have a concept of a person (a *schema* about people in general). As Kirby & Radford (1976) argue, a 'truly unique individual would be incomprehensible, in fact not recognisable as an individual'.

Disagreement between Allport and nomothetic theorists isn't so much to do with whether or not they believe in the idea of uniqueness, but rather how uniqueness is defined. Eysenck, for example, sees uniqueness as reflecting a particular combination of levels on trait dimensions, with the dimensions themselves being the same for all:

> To the scientist, the unique individual is simply the point of intersection between a number of quantitative variables ... (Eysenck, 1953, in Carver & Scheier, 1992)

For Allport, this is a definition of uniqueness based on common traits and is a contradiction in terms: only individual traits capture people's individuality.

According to Krahé (1992), the idiographic claim that there are unique traits that apply to only one individual is undoubtedly false, if taken literally. Traits are defined as *differential constructs* that refer to a person's position on a trait dimension relative to that of other people. But Krahé also believes that, at the opposite extreme, the nomothetic view of traits as explanatory constructs which apply to everyone is equally misguided.

Rather like Eysenck, Kline (1981b) believes that the existence of personality scales or questionnaires is compatible with the notion of uniqueness. In any particular sample, individuals will have very different profiles across a range of scales, but this doesn't mean they don't share certain characteristics with other members of the sample.

Is a science of unique individuals possible?

ASK YOURSELF...

- Is either the idiographic or nomothetic approach more compatible with the aims of science in general, and psychology in particular (as discussed in Chapter 3)?

Increasingly, psychologists are coming to believe that the idiographic and nomothetic approaches, far from being opposed and mutually exclusive, are *complementary* and interdependent (Krahé, 1992). Even Allport didn't reject the nomothetic approach completely. For example, when discussing the nature of psychology as a science, Allport (1960) says that:

> Science aims to achieve powers of understanding, prediction and control above the level of unaided common sense. From this point of view it becomes apparent that only by taking adequate account of the individual's total pattern of life can we achieve the aims of science. Knowledge of general laws ... quantitative assessments and correlational procedures are all helpful: but with this conceptual (nomothetic) knowledge must be blended a shrewd diagnosis of trends within an individual... Unless such idiographic (particular) knowledge is fused with nomothetic (universal) knowledge, we shall not achieve the aims of science, however closely we imitate the methods of the natural and mathematical sciences.

Jaccard and Dittus (1990, in Krahé, 1992) argue that it's untrue that a strictly idiographic approach is directly opposed to the identification and development of universal laws of human behaviour. The idiographic researcher, like the nomothetic, is interested in explaining behaviour, and to do this both seek a general theoretical framework that specifies the constructs that should be focused upon and the types of relationships expected among these concepts. The essential difference between the two approaches is that one applies the framework to a single person, while the other applies it to people in general. However, they share the same scientific aim.

Traits vs situations

Most definitions of traits focus on their stability and permanency, which implies that an individual's behaviour is consistent over time and from one situation to another. Indeed, Baron & Byrne (1991) define personality as:

> The combination of those relatively enduring traits which influence behaviour in a predictable way in a variety of situations.

ASK YOURSELF...

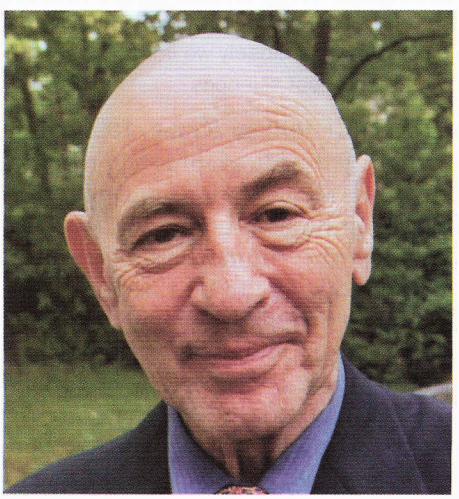
- According to the fundamental attribution error (FAE) and actor–observer effect (AOE), how are we likely to judge the consistency of our own and others' behaviour respectively? (See Chapter 23.)

The FAE involves attributing other people's behaviour primarily to their dispositional qualities (including personality traits). We're therefore likely to regard their behaviour as more consistent (and hence more predictable) than our own, which we see primarily as a response to the situation (AOE).

Seeing behaviour as being caused primarily by personality traits (the *trait approach*) is usually opposed to what has become known as *situationism* (Mischel, 1968) – the view that behaviour is largely determined by situational factors.

The consistency controversy

Mischel (1968), a social learning theorist (see Chapter 35), sparked the 'consistency controversy' by declaring that he could find very little evidence of *intraindividual* or *cross-situation consistency*. In other words, the same person tends to behave inconsistently in different situations – the opposite of what personality theorists would predict. He argued that the average correlation between different behavioural measures designed to tap the same personality trait was typically between 0.1 and 0.2, often lower, Correlations between scores on personality tests designed to measure a given trait and measures of behaviour in various situations meant to tap the same trait rarely exceeded 0.3.



Walter Mischel (born 1930)

Box 42.2 Situationism

- Mischel took these very low correlations to indicate the importance of the situation in determining behaviour (*situationism*).
- If people behave inconsistently, the usefulness of the trait concept disappears and we're left only with situational influences to account for the inconsistency of individual behaviour. The same person behaves differently in different situations, because different situations require different behaviour and are associated with different kinds of reinforcements.
- So, from this (rather extreme) situationist perspective, *intraindividual inconsistency* is exactly what we'd expect!

ASK YOURSELF...

- Intuitively, does there seem to be anything wrong with situationism, at least in its extreme form?
- Surely different people behave differently even within the same situation and, conversely, aren't we recognisably the same person from one situation to another?

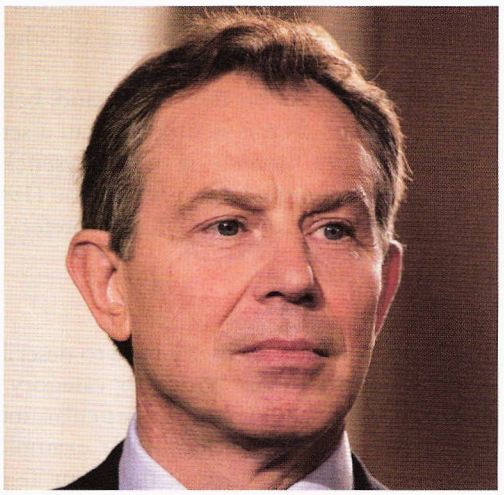
Evidence against situationism

Eysenck & Eysenck (1980) and Kline (1983) cite a number of studies which demonstrate consistency between scores on questionnaires and rating scales on the one hand, and behaviour on the other (average correlations of around 0.8). In addition, several writers have argued that to regard behaviour as being caused *either* by situational factors *or* by personality traits is an oversimplification of a complex issue. Bowers (1973), Endler (1975), and Pervin & Lewis (1978) all advocate an *interactionist* position, which stresses the mutual influence of situational and dispositional variables:

$$\text{Behaviour} = \text{Person} \times \text{Situation}$$

For example, Bowers reviewed 11 studies covering a wide range of behaviour, including aggression in young boys, anxiety in students, and resistance to temptation in children. He concluded that 13 per cent of the variance in participants' behaviour was due to *person variables*, 10 per cent to *situational variables*, and 20 per cent to an *interaction* between the two. While this kind of research cannot determine whether personality or situation is more important, the results nevertheless clearly favour the interactionist position (Argyle, 1983).





Tony Blair's pro-CND past is seen by some as incompatible with his current New Labour policies

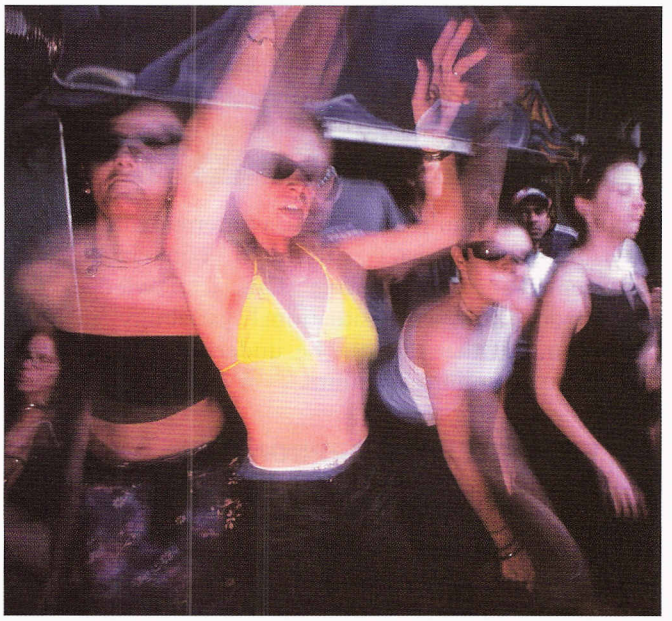
The psychological situation

Mischel (1973) has moved towards a more interactionist position. But, in preference to traits, he talks about *social cognitive units* (or *person variables*). These incorporate a person's cognition, and the effect this has on his/her actions which are then assessed in relation to the situations in which they occur. They focus on what the person *does* (cognitively, affectively, and behaviourally), as opposed to what the person *has* in terms of traits, and include cognitive activities, encoding strategies, expectancies, values, preferences and goals.

Mischel believes that the same situation can have different *meanings* for different individuals, depending on past learning experiences. This determines how we select, evaluate, and interpret stimuli and, in turn, how particular stimuli affect our behaviour. It follows that situational factors on their own cannot account adequately for human behaviour, because they don't exist objectively, independent of the actor. Based on a study of children's ability to resist temptation when looking at attractive sweets, Mischel (1973) concluded that:

> The results clearly show that what is in the children's heads – not what is physically in front of them – determines their ability to delay ...

So, the *psychological situation* constitutes a critical determinant of behaviour: the psychological meaning of a situation for the individual (how it's perceived) is a crucial factor in predicting behaviour and accounting for regularities in behaviour across situations (Krahé, 1992). Another sense in which the influence of situations cannot be defined objectively is that personality traits, in particular introversion–extroversion, dictate the choice of situations people expose themselves to (Eysenck & Eysenck, 1985).





Different people are attracted to different kinds of situation, making it difficult to define their influence objectively

Box 42.3 A cognitive-affective person system (Mischel & Shoda, 1995, 1998)

- Mischel and Shoda's cognitive–affective person system accounts for both intraindividual consistency and predictable patterns of variability across situations.
- For example, a person may be shy in small groups but an excellent public speaker. Viewed in purely trait terms, this pattern of behaviour would be cross-situationally inconsistent. But if the differences in the psychological situation are taken into account, it becomes meaningful and predictable. Speaking to a large audience doesn't require engaging personally with any one individual, whereas making conversation in small groups does.
- Situational factors now represent a moderating influence on individual differences. This is a more sophisticated response to Mischel's critique of traits than pure situationism, or even 'mechanistic interactionism', in which behaviour is seen as a function of combined but independent situational and trait factors (Hampson, 1999).

According to Hampson (1999), contemporary personality psychology isn't so much concerned with consistency as with *coherence*. This acknowledges that people do show cross-situational variability in their behaviour, but that this can be understood when other factors are taken into account.

THE PSYCHOMETRIC APPROACH

Factor analysis

As we saw in Chapter 41, *factor analysis* (FA) is a statistical technique, based on correlation, which attempts to reduce large amounts of data (such as scores on personality questionnaires) to much smaller amounts. Essentially, the aim is to discover which test items correlate with one another and which don't, and then to identify the resulting correlation clusters (or factors). A fundamental issue is: what's the smallest number of factors which can adequately account for the variance between participants on the measures in question?

Eysenck prefers an *orthogonal method* of FA, which aims to identify a small number of powerful, independent (*uncorrelated*) factors. Cattell's preference is for an *oblique* method, which aims to identify a larger number of less powerful factors, which aren't independent (they're *correlated* to some degree).

Since it's possible to carry out a further FA of oblique factors, they're referred to as *first-order factors* and the resultant regrouping of the oblique factors as *second-order factors*. In fact, Cattell has discovered a small number of second-order factors which correspond closely to Eysenck's three major second-order factors (see below). Eysenck's second-order factors are referred to as *types* (what Cattell calls *surface traits*) and Cattell's first-order factors as *traits* (or *source traits*).

Table 42.2 Differences between Eysenck and Cattell in their preferred method of factor analysis

	Eysenck	Cattell
Preferred method of FA	Orthogonal	Oblique
Level of analysis	Second order	First order
Description of factors	Types ('surface traits')	Traits ('source traits')

Both Cattell and Eysenck believe their own methods best reflect the psychological reality of personality, but there's no objective way of establishing that one is right and the other wrong. However, Cattell (1966) and Cattell & Kline (1977) argue that an orthogonal technique prevents the attainment of *simple structure:* each factor will correlate quite highly with a few other factors and very little or not at all with a large number of others. This makes each factor simple to interpret.

Guilford (1959), on the other hand, believes that a set of uncorrelated factors is simpler than a set of oblique or correlated ones (which is why Eysenck opts for an orthogonal technique). However, Kline (1981b) maintains that most factor analysts, in practice, prefer oblique factors.

Eysenck's type theory

What are 'types'?

The term 'type' was formerly used to describe people who belonged either to one group or category or another, so that it was impossible for a particular individual to be considered a member of both. For example, according to the ancient Greek theory of the 'Four Temperaments' or 'Four Humours' (Galen, second century AD), a person was either *choleric* (due to an excess of yellow bile), *sanguine* (due to an excess of blood), *melancholic* (due to an excess of black bile), or *phlegmatic* (due to an excess of phlegm).

These four humours are included in the inner circle of Eysenck's diagram, as shown in Figure 42.1.

According to Eysenck (1995), today the term 'type' is either not used at all, or reserved for combinations of traits that are found to correlate. For example, extroversion is a type concept based on the observed correlations of sociability, liveliness, activity, and so on. The search for a reliable and valid measurement of personality traits is only a first step: the traits we find aren't independent of each other but are correlated in certain patterns that suggest more complex entities that might be called types. But unlike Galen's four humours, Eysenck's types are *personality dimensions,* which represent continua along which everyone can be placed.

Eysenck's dimensions in fact constitute the highest level of a hierarchy (Cattell's 'surface traits'), with a number of traits at the next level down (Cattell's 'source traits'). Below that is a set of habitual responses (typical ways of behaving) linked to a particular trait. At the lowest level is a specific response (a response on one particular occasion: see Figure 42.2).

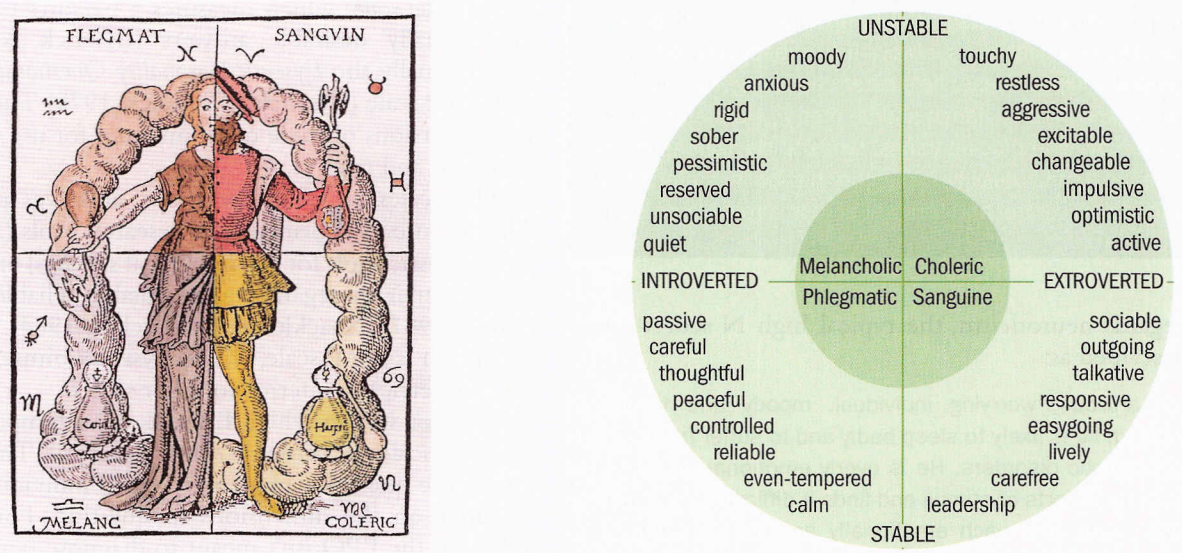


Figure 42.1 Personality has been dissected into component parts for thousands of years; what is interesting is how these ideas relate to the modern concept of personality traits, as shown by Eysenck's dimensions of personality (from Eysenck, 1965)

ASK YOURSELF...

- Which model of intelligence does Eysenck's personality theory remind you of (see Chapter 41)?

Extroversion (E), neuroticism (N) and psychoticism (P)

Eysenck (1947) factor-analysed 39 items of personal data (including personality ratings) for each of 700 neurotic soldiers, screening them for brain damage and physical illness. Two orthogonal (uncorrelated) factors emerged: *introversion–extroversion* (E) and *neuroticism (emotionality)–stability* (N). These two dimensions are assumed to be normally distributed, so that most people will score somewhere in the middle of the scale, and very few at either extreme. 'Typical' introverts and extroverts are 'idealised extremes' (or *ideal types*).

Box 42.4 Typical introverts and extroverts (Eysenck, 1965)

- The *typical introvert* is a quiet, retiring sort of person, introspective, fond of books rather than people; he's reserved and distant except to intimate friends. He tends to plan ahead, 'looks before he leaps' and distrusts the impulse of the moment. He doesn't like excitement, takes matters of everyday life with proper seriousness, and likes a well-ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and doesn't lose his temper easily. He's reliable, somewhat pessimistic, and places great importance on ethical standards.
- The *typical extrovert* is sociable, likes parties, has many friends, needs to have people to talk to, and doesn't like reading or studying by himself. He craves excitement, takes chances, often sticks his neck out, acts on the spur

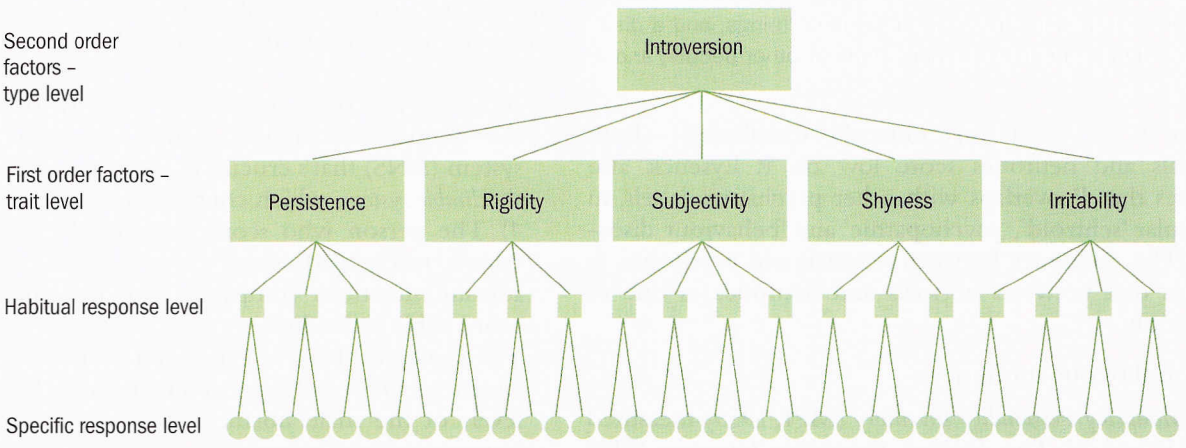


Figure 42.2 Eysenck's hierarchical model of personality in relation to the introversion dimension (after Eysenck, 1953)

of the moment, and is generally an impulsive individual. He likes practical jokes, always has a ready answer, and generally likes change; he's carefree, easy-going, optimistic and likes to 'laugh and be merry'. He prefers to keep moving and doing things, tends to be aggressive and lose his temper quickly; altogether his feelings aren't kept under tight control and he's not always a reliable person.

As regards neuroticism, the typical high N scorer could be described as:

... an anxious, worrying individual, moody and frequently depressed; he is likely to sleep badly and to suffer from various psychosomatic disorders. He is overly emotional, reacting too strongly to all sorts of stimuli and finds it difficult to get back on an even keel after each emotionally arousing experience ... (Eysenck, 1965)

By contrast, the typical low N scorer (stable) individual:

... tends to respond emotionally only slowly and generally weakly and to return to baseline quickly after emotional arousal; he is usually calm, even-tempered, controlled and unworried ... (Eysenck, 1965)

Since the original 1947 study, the existence of E and N has been supported by further research involving literally thousands of participants. Exhaustive research in many parts of the world, by many different researchers, has confirmed the existence of E and N, as well as a third dimension, *psychoticism* (P) (Eysenck & Eysenck, 1985). This was originally uncovered in a 1952 study of psychiatric patients, but is less well established than the other two dimensions. Just as E and N are unrelated to each other, so they are both unrelated to P. According to Eysenck & Eysenck (1975):

A high [P] scorer... may be described as being solitary, not caring for people; he is often troublesome, not fitting in anywhere. He may be cruel and inhumane, lacking in feelings and empathy, and altogether insensitive. He is hostile to others, even his own kith and kin, and aggressive, even to loved ones. He has a liking for odd and unusual things, and a disregard for danger; he likes to make fools of other people, and to upset them.

Unlike E and N, P isn't normally distributed – both normals and neurotics score low on P. Eysenck also believes that P overlaps with other psychiatric labels, in particular 'schizoid', 'psychopathic' and 'behaviour disorders'. The difference between normals and psychotics, as well as that between normals and neurotics, is one of *degree* only.

Personality questionnaires

The *Maudsley Personality Inventory* (MPI, 1959) measured both E and N. The *Eysenck Personality Inventory* (EPI) added a *lie scale,* which measures a person's tendency to give socially desirable answers (Eysenck & Eysenck, 1964). Finally, the *Eysenck Personality Questionnaire* (EPQ) added a P scale (Eysenck & Eysenck, 1975). There are also junior versions of these questionnaires for use with nine-year-olds and over.

The scales all comprise items of a 'yes/no' variety. They're intended primarily as research tools (as opposed to diagnostic tools for use in clinical settings) and, as such, they're generally regarded as acceptable, reliable, and valid (Kline, 1981a; Shackleton & Fletcher, 1984). The main exception is the P scale, which Eysenck himself admits is psychometrically inferior to other scales.

A major way in which Eysenck has attempted to validate his scales is through *criterion analysis.* This involves giving the questionnaires to groups of individuals known to differ on the dimensions in question. For example, although the EPQ isn't meant to diagnose neurosis, we'd expect diagnosed neurotics to score very high on N compared with non-neurotics – and generally this is found to be the case.

The biological basis of personality

Eysenck attempts to explain personality differences in terms of the kinds of nervous system individuals inherit.

- As far as E is concerned, what's crucial is the balance between excitation and inhibition processes in the central nervous system (CNS), specifically the *ascending reticular activating system* (ARAS: see Chapter 4). Its main function is to maintain an optimum level of alertness or 'arousal'. It does this by enhancing the incoming sensory data to the cortex through the excitation of neural impulses, or by 'dampening them down' through inhibition.

Extroverts have a 'strong nervous system'. Their ARAS is biased towards the *inhibition* of impulses, with the effect of reducing the intensity of any sensory stimulation reaching the cortex (they're *chronically under-aroused*). For introverts, the bias is in the opposite direction: the intensity of any sensory stimulation reaching the cortex is *increased* (they're *chronically over-aroused*).

- As far as N is concerned, it's the *reactivity* (or *lability*) of the sympathetic branch of the autonomic nervous system (ANS) that's crucial, in particular, differences in the *limbic system,* which controls the ANS (see Chapter 4). The person who scores high on N has an ANS which reacts particularly strongly and quickly to stressful situations compared with less emotional or more stable individuals.
- The biological basis of P is much more uncertain, but Eysenck (1980) has suggested that it may be related to levels of the male hormone, *androgen,* and/or other hormones (see Chapter 36).

Box 42.5 Evidence relating to biological differences between introverts and extroverts

- According to Eysenck (1967), extroverts become 'psychically fatigued' more easily (e.g. become bored more easily and persevere less) than introverts. According to Kline (1983), on long and tedious jobs extroverts should start better than introverts, do worse in the middle, and then improve again towards the end, while introverts should work much more steadily throughout. These hypotheses were supported by Eysenck (1967, 1971) and Harkins & Green (1975), who found that introverts do better at vigilance tasks, which require prolonged periods of concentration.
- In real life, extroverts change jobs and sexual partners more frequently than introverts, are more likely to divorce, show less brand loyalty in shopping behaviour, and move house more often (Eysenck, 1965; Eysenck & Eysenck, 1985).
- According to Eysenck (1970), introverts have lower pain thresholds and extroverts are more susceptible to the adverse effects of sensory deprivation. For example, one demonstration of the 'stimulus hunger' of extroverts is their willingness to go to great lengths to obtain a 'reward' of loud music or bright lights which introverts work hard to avoid.
- According to Hampson (1995), evidence for the role of the ARAS and arousal mechanisms in E is inconclusive, but great advances have been made since the mid-1980s in understanding the genetics of personality. As a result of large-scale twin, adoption, and family resemblance studies, it's now widely concluded that about 50 per cent of the variation in self-report personality measures may be due to heredity (Loehlin *et al.*, 1988). (But see Chapters 41 and 44 for a discussion of the limitations of family resemblance, twin, and adoption studies.)

Interaction between the biology of N and E

According to Claridge & Davis (2003), Eysenck never really worked out how *interaction* between the limbic system and ARAS takes place in practice. But one prediction, which has stood the test of time experimentally, concerns individuals who are high N and low E (anxiety neurotics in the clinical domain). According to Eysenck, they should have a double 'dose' of arousability: high activity in *both* the emotional brain (limbic system) and the brainstem (ARAS). The prediction that individuals high on N and low on E will show the most extreme responses on physiological measures (such as EEG and measures of ANS arousal) was confirmed by Claridge (1967). This established a strong biological connection between personality and at least one major group of psychological disorders (the anxiety disorders) (Claridge & Davis, 2003).

ASK YOURSELF...

- In terms of introverted and extroverted behaviour, what should be the effect of (a) stimulant and (b) depressant drugs (see Chapter 8)?
- Who should be easier to sedate – introverts or extroverts?

According to Wilson (1976), we'd expect introverts to be more difficult to sedate using a drug such as sodium amytal, because they're supposed to be more aroused. A particularly powerful technique involves *sedation/sleep threshold,* in which a barbiturate (which depresses the CNS) is injected by continuous infusion until the participants either go to sleep or reach some specified level of drowsiness (defined behaviourally or physiologically). The amount of drug needed is a measure of tolerance of sedation (Claridge & Davis, 2003).

Using this method, it's been repeatedly shown that anxiety neurotics, and their 'normal' counterparts (introverted neurotics or *dysthymics*), show extremely high drug tolerance (resistance to sedation) (Claridge & Herrington, 1960, 1962). Both groups were much more difficult to sedate than extroverted neurotics (*hysterics*), who are more easily sedated than normal participants (who score in the middle ranges on E and N).

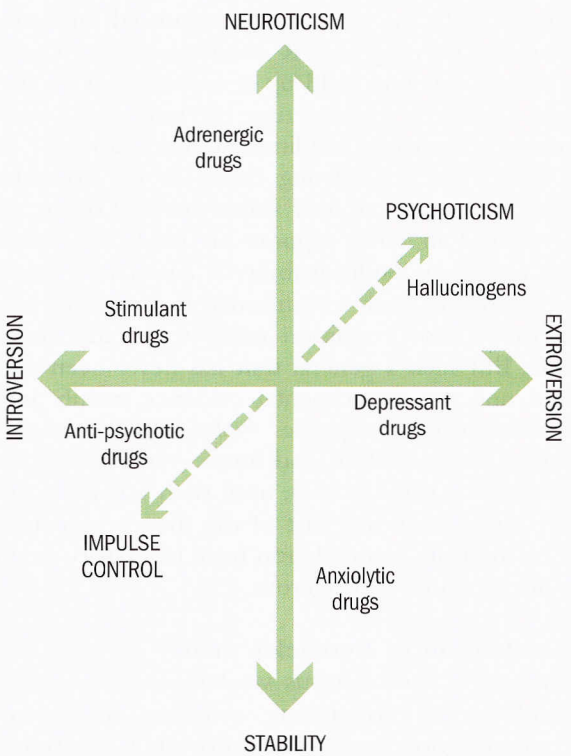


Figure 42.3 Drug addiction and personality (Eysenck, 1983). Source Eysenck, H.J. (1995) 'Trait theories of personality'. In S.E. Hampson & A.M. Coleman (Eds) *Individual Differences and Personality*. London, Pearson Education

Although nearly 50 years old, these studies still represent a valid observation about biology and the pharmacology of personality and psychological disorders (Claridge & Davis, 2003).

For the same reasons, regardless of an individual's normal position on the scale, *stimulant* drugs should shift behaviour in the direction of introversion, while depressant drugs (such as alcohol) should have the opposite effect.

Anxiolytic (*anti-anxiety*) drugs should increase emotional stability, *adrenergic* drugs (those which mimic the effects of adrenaline) should decrease it, *hallucinogens* should increase psychotic behaviour, and *anti-psychotic* drugs (*narcoleptics*) should decrease it. According to Eysenck (1995), empirical studies have, on the whole, supported these causal hypotheses (see Figure 42.3).

Personality and conditionability

ASK YOURSELF...

- Given what we've said so far about Eysenck's theory, how would you expect introverts and extroverts to differ regarding how easily they can be (classically) conditioned? (See Chapter 11.)

From a strictly psychological point of view, the importance of the biological aspects of Eysenck's theory is how they're related to individual differences in *conditionability*. Because extroverts require a stronger stimulus to make an impact compared with the more easily stimulated introvert, and because the learning of S–R connections is best achieved by a strong and rapid build-up of excitation in the nervous system (which is characteristic of introverts), introverts should be more easily conditioned than extroverts.

Despite Eysenck's strong claims to the contrary, the evidence is equivocal: only about one half of the studies he reviewed in 1967 support his predictions. Eysenck seems to regard conditionability as a unitary trait, that is, if introverts are easily conditioned to one kind of stimulus, they'll also condition easily to a range of other stimuli. But such a general trait has never been demonstrated, and the experimental evidence mainly involves three conditioned responses – the GSR (galvanic skin response), the eye blink, and simple verbal conditioning. According to Kline (1983), until such a general dimension is discovered, this part of the theory remains weak and, in addition, extrapolation from laboratory studies to real-life situations is dangerous.

An evaluation of Eysenck's theory

- One of its most serious weaknesses is the failure to produce any convincing evidence that introverts condition more easily than extroverts. Conditionability is a vital part of the overall theory, because it points 'inwards' towards the biological (including genetic) basis of personality and 'outwards' towards the socialisation experiences of different individuals (behaviour always being the product of an interaction between the nervous system and the environment).
- Heim (1970) has criticised the EPI (and, by implication, the EPQ) because of its forced-choice ('yes/no') format. She argues that a few, simple yes/no questions can hardly be expected to do justice to the complexities of human personality, and she has criticised the lie scale for its lack of subtlety.
- Validation of the scales has involved the use of *criterion groups,* such as groups of neurotics, who tend to score at the extreme ends of the scale. But can we assume that the scale is 'valid' for the majority of people who lie somewhere in the middle? This needs to be empirically tested rather than simply assumed.
- According to Claridge & Davis (2003), Eysenck can take most of the credit for the *dimensional* approach to understanding psychological disorders. In using FA to identify the basic dimensions of *normal* personality, he always had in mind the need to describe and explain the *abnormal*. He believed that the various psychological disorders recognised in psychiatry actually define the *extremes* of his personality dimensions. (See Figure 42.4.)

His view was that disorders *aren't* diseases in the medical sense. Rather, they're *behavioural* disturbances, an exaggerated form of response patterns that characterise the personality dimensions. For example, anxiety neurotics are the clinical counterparts of individuals high on N and I.

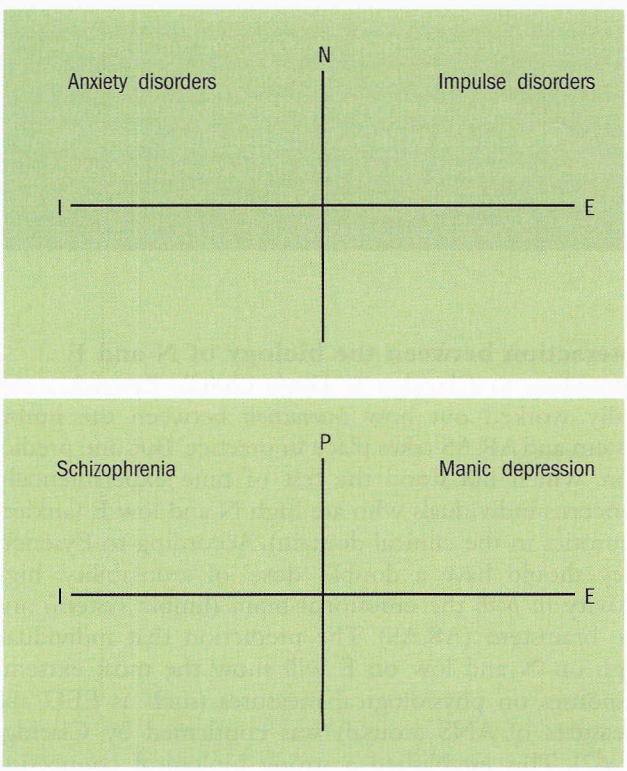


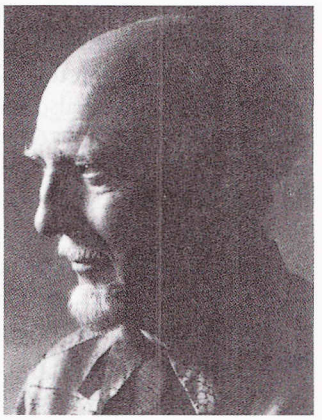
Figure 42.4 Eysenck's location of non-psychotic disorders in two dimensions of N/I-E (top) and psychotic disorders in two dimensions of P/I-E (bottom) (from Claridge & Davis, 2003)

While he was quite successful in mapping N onto *neurosis,* he was less successful in mapping P onto *psychosis.* The question is still open as to whether P has anything to do with psychosis at all. It seems to be more relevant to psychopathic and other antisocial behaviours than to psychotic disorders such as schizophrenia (Claridge & Davis, 2003).

- Shackleton & Fletcher (1984) have highlighted the vast amount of research Eysenck's theory has generated:

> Whilst the theory as it now stands is not adequate, some aspects of it, maybe even most, may well survive the test of time.

Indeed, E and N seem to have stood the test of time, in that they're both included in the 'big five' personality factors (see below).



Raymond B. Cattell (born 1905)

Cattell's trait theory

As we've already seen, Cattell's factors are first-order, oblique, source traits, which he believed to be the fundamental dimensions of personality, the underlying roots or causes of clusters of behaviour (surface traits). Whereas surface traits may correspond to common-sense ways of describing behaviour and may sometimes be measured by simple observation, they're actually the result of interactions among the source traits. Valid explanations of behaviour must concentrate on source traits as the structural factors which determine personality.

Cattell identified three sources of data relevant to personality: *L-data* (L for 'life'), *Q-data* (Q for 'questionnaire') and *T-data* (T for 'tests').

- *L-data* refer to ratings by observers. Cattell regarded these as the best source, but he also recognised that they're notoriously difficult to obtain; great skill and time are needed to make accurate ratings.
- *Q-data* refer to scores on personality questionnaires. His 16 factors (source traits) are measured by the widely used *Cattell 16 PF* (personality factor) *questionnaire,* which is intended for use with adults. As shown in Table 42.3, the first 12 factors are found in L-data and Q-data, while the last four (Q1–Q4) are based on Q-data only. There are versions of the 16 PF designed for children as young as four.

Cattell's scales aren't exclusively of the 'yes/no' variety (there may be three choices – yes/occasionally/no). Although intended mainly as a research instrument, the 16PF has been used in clinical work, as well as occupational selection and assessment. However, its validity as a diagnostic tool in a clinical setting has been seriously questioned.

- *T-data* refer to objective tests specially devised to measure personality. For example, the objective–analytic (O–A) test battery measures, amongst other things, GSR, reaction time, body sway and suggestibility. T-data are objective, primarily in the sense that the purpose of the test is concealed from the participant.

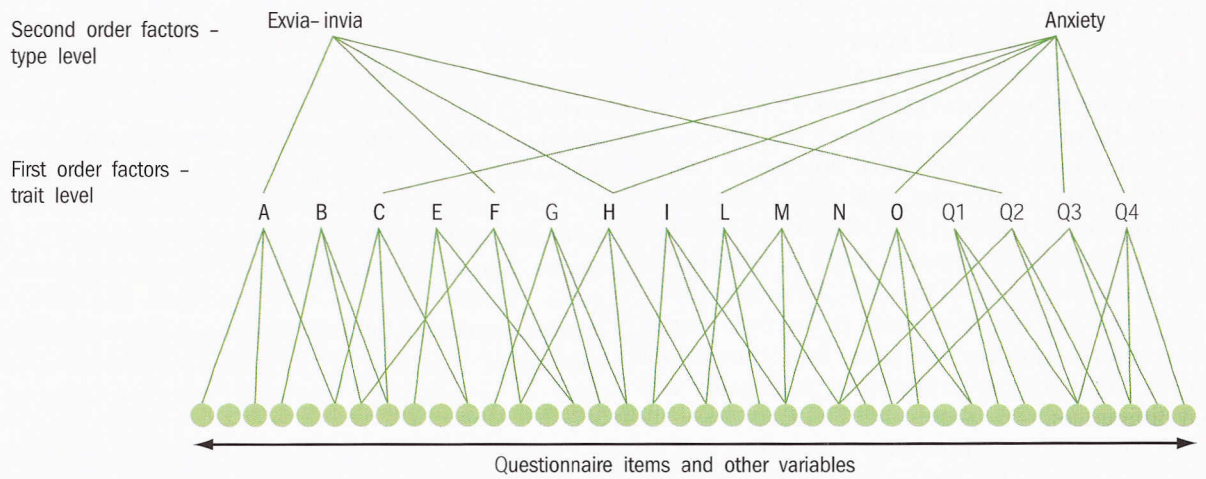


Figure 42.5 The hierarchical organisation of personality resulting from a second-order analysis of the first-order 'source traits' (after Cattell, 1965)

Differences between Cattell and Eysenck

- According to Cattell, some overlap between first-order (oblique) factors is to be expected. For example, an intelligent person (B-factor) is also likely to be shrewd and worldly (N-factor). Cattell also carried out a second-order FA of his 16 primary factors, which produced a number of surface traits. The two most important were *exvia–invia* and *anxiety*. These seem to correspond to Eysenck's E and N respectively (see Figure 42.5). Others included *radicalism* (aggressive and independent), *tenderminded-ness* (sensitivity, frustration and emotionality), and *superego* (conscientious, conforming and preserving).
- Cattell believes there's a fundamental *discontinuity* between normals and, say, schizophrenics; that is, there's a *qualitative* difference between them (and not merely a quantitative one, as Eysenck maintains). For example, Q-data used with psychiatric patients produce 12 factors which discriminate psychotics as a group (e.g. paranoia, suicidal disgust, schizophrenia and high general psychosis); they score highly on these factors compared with normals. A second-order FA of Q-data from psychiatric patients yields three factors, one of which resembles Eysenck's P.
- Cattell, much more than Eysenck, acknowledges how behaviour can fluctuate in response to situational factors. His definition of personality as that which 'determines behaviour in a defined situation and a defined mood' (Cattell, 1965) implies that behaviour is never totally determined by source traits. Although personality factors remain fairly stable over time, they constitute only one kind of variable influencing overt behaviour. Others include (a) *mood and state factors* (e.g. depression, arousal, anxiety, fatigue and intoxication); and (b) *motivational factors* (innate, biological drives and culturally acquired drives).

Single- and multi-trait theories, and the 'big five'

Eysenck's and Cattell's theories are examples of *multi-trait theories*. An influential *single-trait theory* is Rotter's (1966) locus of control (see Chapter 12). For a single-trait theory to be useful, it must identify a trait that determines a wide range of important behaviours (Hampson, 1995).

Multi-trait theories try to include all aspects of personality, and assume that individual differences can be described in terms of a particular profile on the same set of traits. According to Krahé (1992), despite its troubled history, 'the trait concept presents itself in remarkably good shape at the beginning of the '90s'. Since the 1980s, there's been a vast amount of research to discover a small but comprehensive number of basic trait dimensions which can account for the structure of personality and individual differences.

There's a growing consensus that personality can be adequately described by five broad constructs or factors, often referred to as the 'big five' (Costa & McCrae, 1992; Digman, 1990; Goldberg, 1993; McCrae & Costa, 1989).

Table 42.3 The 16 source traits measured by Cattell's 16 PF questionnaire (based on Cattell, 1965)

Description	Name of trait	Description
Warm-hearted, outgoing, easygoing, sociable	**A** Affectia vs Sizia	Reserved, cool, detached, aloof
Abstract thinker, intellectual interests [high score]	**B** Intelligence	Concrete thinker, practically minded [low score]
Emotionally stable, calm, mature	**C** Ego strength vs Dissatisfied emotionality	Emotionally unstable, easily upset, immature
Assertive, aggressive, dominant, competitive	**E** Dominance vs Submissiveness	Submissive, modest, mild, accommodating
Happy-go-lucky, enthusiastic	**F** Surgency vs Desurgency	Pessimistic, subdued, sober, cautious, serious
Persevering, conscientious moralistic [high score]	**G** Superego strength	Expedient, disregard for rules, law unto oneself [low score]
Adventurous, gregarious uninhibited	**H** Parmia vs Threctia	Shy, timid, diffident, inhibited
Tender-minded, sensitive, gentle, clinging	**I** Premsia vs Harria	Tough-minded, self-reliant, realistic, no-nonsense
Suspicious, jealous, self-opinionated	**L** Protension vs Alexia	Trusting, adaptable, easy to get along with
Unconventional, imaginative, bohemian	**M** Autia vs Praxernia	Conformist, conventional, influenced by external realities
Shrewd, calculating, worldly	**N** Shrewdness vs Naivety	Simple, unpretentious, lacking insight
Insecure, worrying, self-reproaching [high score]	**O** Guilt proneness	Self-assured, confident, complacent, spirited [low score]
Liberal, free-thinking	**Q1** Radicalism vs Conservatism	Conservative, traditional
Preference for own decisions	**Q2** Self-sufficiency vs Group dependence	Group dependent, a follower
Controlled, socially precise [high score]	**Q3** Self-sentiment Strength	Undisciplined, careless of social rules [low score]
Relaxed, composed [high score]	**Q4** Ergic tension	Overwrought, tense, frustrated [low score]

Table 42.4 The 'big five' personality factors

	Desirable traits	Undesirable traits
(I) Extroversion (corresponds to Eysenck's construct)	Outgoing, sociable, assertive	Introverted, reserved, passive
(II) Agreeableness	Kind, trusting, warm	Hostile, selfish, cold
(III) Conscientiousness	Organised, thorough, tidy	Careless, unreliable, sloppy
(IV) Emotional stability (or Neuroticism) (corresponds to Eysenck's construct).	Calm, even-tempered, imperturbable	Moody, temperamental, narrow
(V) Intellect/openness to experience	Imaginative, intelligent, creative	Shallow, unsophisticated, imperceptive

An evaluation of the 'big five'

- The 'big five' have their roots in attempts to seek the dimensions of personality in the natural language of personality description (John, 1990), and originated with Cattell's theory (Claridge & Davis, 2003).
- While different versions of the 'big five' have been proposed, the five-factor model has provided a unified framework for trait research (Costa & McCrae, 1993). It has mainly been concerned with personality description and structure, rather than underlying mechanisms and causes. But there's growing interest in possible *genetic* influences (Loehlin, 1992).
- Although Eysenck (1991) argues for his 'giant three' (E, N and P – a combination of factors II and III in the five-factor model), the differences seem quite trivial now compared with, say, the disagreement between Eysenck and Cattell's 16 source traits (Hampson, 1995). Not only do E and N appear in Table 42.4, but the negative pole of Agreeableness is similar to P, with overtones of aggressiveness, impulsiveness and general 'nastiness' (Claridge & Davis, 2003).
- Nevertheless, there remains the fundamental problem of the *meaning* of the factors that are extracted (Kline, 1993; Krahé, 1992). Ultimately, personality factors, however many, must be identified from their correlations with external criteria (Kline, 1993).
- According to Eysenck (1995), the system is still too new (except for E and N) for there to have been enough research to allow a proper evaluation. But Hampson (1999) believes that, at the end of the 1990s, the 'big five' remain pre-eminent as a description of normal personality.
- According to Moghaddam (2002), 'big five' theorists claim to have uncovered universal traits, with the implication that the central features of personality are relatively fixed from birth (but see Research Update 42.1). However, while he accepts that *the disposition to have dispositions* is *universal:*

> ... the particular dispositions one develops are to a large degree a result of interactions with the social and physical environment. The so-called Big Five have emerged through research with respondents from either Western societies or Westernized sections of other societies, typically students in modern universities modelled on Western universities.

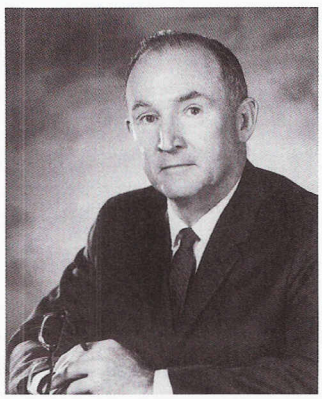
Research update 42.1 The stability of personality across the lifespan

- According to Roberts & Delvecchio (2000), the consistency of personality increases from childhood to young adulthood, increases further still until about 30, then stabilises between 50 and 70.
- This was confirmed by Caspi (2000), who followed up a group of children from age three up to 21. Three-year-olds regarded as uncontrollable grew up to be impulsive, unreliable and antisocial, while those regarded as inhibited were more likely to grow up to be more depressed, unassertive, and to have fewer sources of social support.
- However, McCrae *et al.* (2000) suggest that some traits are more fluid than others. An international team of researchers looked at changes in the 'big five' between the ages of 14 and 30, in samples from Germany, the UK, Spain, the Czech Republic and Turkey. N, E and Openness to experience decreased over this period, but Agreeableness and Conscientiousness increased.

KELLY'S PERSONAL CONSTRUCT THEORY

Kelly's *personal construct theory* (PCT) is an idiographic approach, stressing the uniqueness of each individual. It's also a *phenomenological approach,* that is, a view of the world through a person's own eyes and not an observer's interpretation or analysis.

Man the scientist



George A. Kelly (1905–1966)

According to Kelly, we're all scientists in the sense that we put our own interpretation (or theories) on the world of events, and from these personal theories we produce

hypotheses (predictions about future events). Every time we act, we're putting our hypotheses to the test and, in this sense, behaviour is the independent variable – it is the experiment. Depending on the outcome, our hypotheses are either validated or not, and this will determine the nature of our subsequent behavioural experiments (Fransella, 1981).

Constructive alternativism

Although a real world of physical objects and events does exist, no one individual has the privilege of 'knowing' it: all we can do is place our personal constructs upon it. The better our constructs 'fit' the world generally, the better our control over our own, personal world will be. According to Kelly (1955), there's no way of getting 'behind' our interpretation of the world to check if it matches what the world is really like. All we have are our own interpretations, and so we necessarily see the world 'through goggles', which cannot be removed. However, these goggles or constructs aren't fixed once and for all. The person as scientist is constantly engaged in testing, checking, modifying, and revising his/her unique set of constructs.

The repertory grid technique

Box 42.6 Constructing a repertory grid (rep grid) (based on Kelly, 1955)

The basic method involves the following steps.

- Write a list of the most important people in your life (*elements*).
- Choose *three* of these elements.
- Ask yourself, in what ways are two of these alike and different from the third?

The descriptions given (e.g. 'My mother and girlfriend are affectionate, my father is not') constitute a *construct,* which is expressed in a *bipolar way* ('affectionate–not affectionate').

- This construct is applied to all the remaining elements. Remember, constructs are bipolar opposites (either affectionate or not affectionate).
- Then another set of three elements is selected, and the whole process is repeated. It continues until either you've produced all the constructs you can (which is usually no more than 25 with one set of elements), or until a sufficient number has been produced as judged by the investigator.

All this information can be collated in the form of a grid, with the elements across the top and the constructs down the side, and a tick or cross indicating which pole of the construct is applicable (for example, a tick indicates 'affectionate' and a cross indicates 'not affectionate': see Table 42.5).

Table 42.5 Example of a rep grid

Constructs	Elements						
	Mother	Father	Brother	Sister	Boyfriend	Girlfriend	Psychology lecturer etc.
Affectionate (✓) Non-affectionate (×)	✓	×	×	✓	×	✓	✓
Intelligent (✓) Unintelligent (×)							
Sense of humour (✓) No sense of humour (×)							
etc.							

ASK YOURSELF...

- Have a go at constructing your own repertory grid.

The *repertory grid test* is an attempt to help individuals discover the fundamental constructs they use for perceiving and relating to others. It's used as a major research instrument, is very flexible, and can be used in different ways. It can be factor-analysed, which often reveals that many constructs overlap (they mean more or less the same thing). Probably between three and six major constructs cover most people's construct system.

The rep grid can be used *nomothetically,* as Bannister and Fransella have done with thought-disordered schizophrenics. Their grid test of thought disorder (Bannister & Fransella, 1967) contains standardised elements and constructs (supplied by the researcher). It has been standardised on large numbers of similar patients, so that an individual score can be compared with group norms. However, this is probably rather far removed from how Kelly intended the technique to be used.

The rep grid has also been used to study how patients participating in group psychotherapy change their perception of each other (and themselves) during the period of therapy: the group members themselves are the elements and a number of constructs are supplied (Fransella, 1970). Fransella (1972) has used this method extensively with people being treated for severe stuttering.

However, its uses aren't confined to clinical situations. Elements needn't be people at all, but can be occupations, religions, cars, and so on. Shackleton & Fletcher (1984) argue that the rep grid stands on its own as a technique – you don't have to believe in Kelly's PCT in order to use it.

An evaluation of PCT

- Bannister & Fransella (1980) and Fransella (1981) point out that PCT is deliberately stated in very abstract terms to avoid the limitations of a particular time and culture. It's an attempt to redefine psychology as a psychology of people and is 'content free'. As we noted earlier, PCT isn't so much a personality theory, more a total psychology. Kelly isn't concerned with separate subdivisions of psychology as dealt with in most textbooks. For example, the traditional concept of *motivation* can be dispensed with. We don't need concepts like drives, needs, or psychic energy to explain what makes people 'get up and go' – man is a form of motion and a basic assumption about life is that 'it goes on':

  > It isn't that something makes you go on, the going on is the thing itself ... (Kelly, 1962).

- However, he implicitly assumes that we all seek a sense of order and predictability in our dealings with the external world – the overriding goal of anticipating the future represents a basic form of motivation. We achieve this through behaving much like a research scientist. 'The scientist's ultimate aim is to predict and control' (see Chapter 3).
- Various aspects of *emotion* are dealt with in terms of how an individual's construct system is organised and how it changes. For example, 'anxiety' is the awareness that what you're confronted with isn't within the framework of your existing construct system – you don't know how to construe it. For some, this approach is far too cognitive and rational, leaving the subjective experience (the 'gut feeling') that we call anxiety out of the picture (see Chapter 44).
- Peck & Whitlow (1975) believe that Kelly trivialises important aspects of behaviour, including learning, emotion and motivation, and neglects situational influences on behaviour. PCT appears to place the person in an 'empty world'. However, they conclude by saying that:

  > Personal construct theory constitutes a brave and imaginative attempt to create a comprehensive, cognitive, theory of personality.

HUMANISTIC THEORIES

Humanistic theories (and Kelly's PCT) have their philosophical roots in *phenomenology* and *existentialism,* and some would say they're more 'philosophical' than 'psychological'. They're concerned with characteristics that are distinctively and uniquely human, in particular experience, uniqueness, meaning, freedom, and choice. We have first-hand experience of ourselves as people, and Rogers' theory in particular is centred around the self-concept.

What Rogers and Maslow have in common is their positive evaluation of human nature, a belief in the individual's potential for personal growth (*self-actualisation*). But while Maslow's theory is commonly referred to as a 'psychology of being' (self-actualisation is an end in itself and lies at the peak of his *hierarchy of needs:* see Chapter 9), Rogers' is a 'psychology of becoming' (it's the *process* of becoming a 'fully functioning person' that's of major importance and interest).

Rogers' self theory

Rogers (like Maslow) rejected the deterministic approach of psychoanalytic theory (see below) and behaviourism (see Chapter 2). Instead, humanistic theorists see behaviour as a response to the individual's perception/interpretation of external stimuli. As no-one else can know how we perceive, we're the best experts on understanding our own behaviour. Rogers also sees human nature in a very positive and optimistic light: 'There is no beast in man; there is only man in man'.

The self

The *self* is an 'organised, consistent set of perceptions and beliefs about oneself'. It includes a person's awareness of 'what they are and what they can do', influencing both their perception of the world and their behaviour. We evaluate every experience in terms of self, and most human behaviour can be understood as an attempt to maintain consistency between our self-image and our actions (see Chapter 33).

However, this consistency isn't always achieved and our self-image (and related self-esteem) may differ quite radically from our actual behaviour and from how others see us. For example, a person may be highly successful and respected by others, and yet regard him/herself as a failure! This illustrates what Rogers calls *incongruence.* Because incongruent experiences, feelings, actions, and so on conflict with our (conscious) self-image (and because we prefer to act and feel in ways that are consistent with our self-image), they can be threatening. Consequently, we may deny them access to awareness (they may remain *unsymbolised*) through actual denial, distortion or blocking.

These *defence mechanisms* prevent the self from growing and changing, and widen the gulf between our self-image and reality (our actual behaviour or our true feelings). As the self-image becomes more and more unrealistic, so the incongruent person becomes more and more confused, vulnerable, dissatisfied and, eventually, seriously maladjusted. By contrast, the self-image of the congruent person is flexible and changes realistically as new experiences occur. When your self-image matches what you really think and feel and do, you're in the best position to self-actualise.

Box 42.7 Two examples of a rigid and inflexible self-image

- Suppose that a young man's self-image requires that every woman he meets will find him irresistible and fall head-over-heels in love with him. He meets a woman whom he finds attractive, but she shows no interest in him (this represents incongruence between his self-image and his experience). How does he deal with the threat this represents for him? He might say, 'She's just playing hard to get' or 'She has no taste' or 'She must be crazy – thank goodness I found out before she fell hopelessly in love with me'.
- At the opposite extreme is a young man who believes he's totally unattractive to women. If an attractive woman shows an interest in him, this will produce incongruence and hence threat, and he might deal with it by rationalising: 'She's just feeling sorry for me', or he might deliberately do something to sabotage the relationship and so remove the threat.

Development of the self-concept

Many of Rogers' therapeutic clients seemed to have learned during childhood that in order to obtain the love and acceptance of *significant others* (particularly parents), they have to feel and act in distorted or dishonest ways (*conditional positive regard*).

To maintain conditional positive regard, we develop *conditions of worth* (those conditions under which positive regard will be forthcoming) which become internalised. We perceive and are aware of those experiences that coincide with the conditions of worth, but distort or deny those that don't. This denial and distortion lead to a distinction between the *organism* (the whole of our possible experience, everything we do, feel, and think) and the *self* (the recognised, accepted, and acknowledged part of our experience). Ideally, the two would coincide, but for most of us they don't.

Corresponding to the need for positive regard is the need for *positive self-regard* (thinking of ourselves as good, lovable and worthy). To experience positive self-regard, our behaviour and experience must match our conditions of worth – but this can produce incongruence through the denial of our true thoughts and feelings. Since the need for positive regard and positive self-regard is so strong, these conditions of worth can supersede the values associated with self-actualisation. Consequently, we come to behave, think and feel in particular ways because others want us to, and many adult adjustment problems are bound up with an attempt to live by other people's standards instead of one's own.

ASK YOURSELF...

- Can you think of any examples of where you have lived – or currently do live – by other people's standards?
- Is this (at least in part) an inevitable part of being a dependent child?
- Is living by your own standards a way of defining psychological adulthood? (See Chapter 38.)

The therapist in Rogers' *client-centred therapy* provides the client with *unconditional positive regard*. The therapist creates an atmosphere of total acceptance and non-judgemental support, regardless of what the client says or does. In this way, the client in turn comes to accept certain feelings and thoughts as his/her own, instead of denying, distorting, and disowning them. Finally, positive self-regard is no longer dependent upon conditions of worth (see Chapter 45).

PSYCHODYNAMIC THEORIES

As we saw in Chapter 2, *psychodynamic* implies the active forces within the personality that motivate behaviour, in particular the unconscious conflict between the id, ego and superego. Freud's was the first of this kind of theory and all psychodynamic theories stem, more or less directly, from Freud's *psychoanalytic theory.*

ASK YOURSELF...

- What do you already know about Freud's ideas?
- Psychoanalytic theory applies to motivation (Chapter 9), forgetting (Chapter 21), prejudice (Chapter 25), aggression (Chapter 29) and many aspects of development (see Chapters 35–38).

Freud's psychoanalytic theory

Freud believed that conflict within the personality is unavoidable, because the ego is being 'pulled' in two opposing directions by the id and the superego. The ego's solution comes in the form of three forms of compromise, namely *dreams, neurotic symptoms* and *defence mechanisms.*

Dreams

'A dream is a [disguised] fulfilment of a [suppressed or repressed] wish' (Freud, 1900; 1976a). It represents a compromise between forbidden urges and their expression. What we dream about and are conscious of upon waking is called the *manifest content,* while the dream's meaning (the wish being fulfilled) is the *latent content.* The manifest content is often the product of the weaving together of certain fragments from that day's events (*day residues*) and the forbidden wish. It often appears disjointed, fragmentary, and sometimes bizarre and nonsensical. *Dream interpretation* (a major technique involved in psychoanalysis) aims to make sense of the manifest content by 'translating' it into the underlying wish fulfilment.

CASE STUDY 42.1 An Oedipal dream reported by one of Freud's patients (from *The Interpretation of Dreams*, 1900; 1976a)

A 'typical example of a disguised Oedipus dream' is that of a man who dreamt that he had a secret liaison with a lady whom someone else wanted to marry. He was worried in case this other man might discover the liaison and the proposed marriage come to nothing. He, therefore, behaved in a very affectionate way to the man. He embraced him and kissed him.

ASK YOURSELF...

- How do you think Freud interpreted this dream?



The Nightmare (Fuseli)

Dreams come into being through *dream work* (controlled by the ego), which converts the underlying (latent) wish into the manifest content. It involves *displacement, condensation* and *concrete representation*.

- *Displacement* refers to the substitution of the real target of the dreamer's feelings by a person or object that then becomes the target for those feelings. The substitute is symbolically (unconsciously) linked to the true target, as in the example of one of Freud's patients who dreamed of strangling a little white dog which represented her sister-in-law, who had a very pale complexion and whom the dreamer had previously called 'a dog who bites' (Stevens, 1995). This is a crucial part of the *disguise* that conceals from the dreamer the true meaning of the dream.

The sister-in-law/dog example shows how certain symbols will be peculiar to individual dreamers. But many dream symbols have a conventional meaning within a culture, particularly those that represent the penis (e.g. snakes, trees, trains, daggers, umbrellas), the vagina (e.g. small boxes, cupboards, ships, and other vessels), and sexual intercourse (e.g. climbing ladders or stairs and entering tunnels).



A symbol of sexual intercourse – or simply a train entering a tunnel?

- *Condensation* involves the *same* part of the manifest content representing *different* parts of the latent wish. For example, a king may represent not only the dreamer's father, but also authority figures or very wealthy and powerful people in general. So, more than one dream idea may be 'condensed' into a single manifest image.
- *Concrete representation* refers to the expression of an abstract idea in a very concrete way. For example, the concrete image of a king could represent the abstract notions of authority, power, or wealth. This is sometimes called 'dramatisation'.

The importance of dream work is that it permits the expression of a repressed (and, therefore, forbidden and disturbing) wish, and at the same time allows the dreamer to go on sleeping. The compromise represented by dreaming takes the form of disguising the true nature of the dream (i.e. wish fulfilment), for if it weren't disguised, the dreamer would wake up in a state of shock and distress. Hence, 'the dream is the guardian of sleep'.

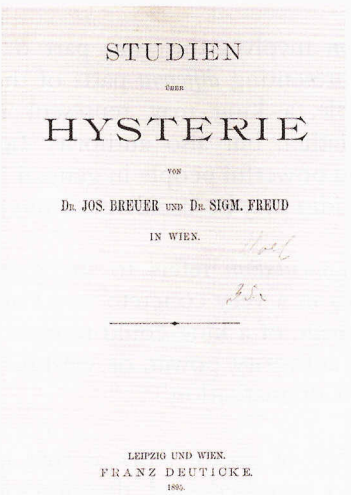
Dream interpretation is also what Freud called the 'royal road to the unconscious'. Reversing the dream work, and unravelling the wish from the manifest content, can provide invaluable information about the unconscious mind in general, and about the dreamer's in particular.

Neurotic symptoms

Like dreams, neurotic symptoms are essentially the expression of a repressed wish (or memory) that's become

disguised in very similar ways to dream work. The symptom may in some way symbolise the wish it's linked to, as in a patient who suffered from hysterical hand-twitching, which was related to her memories of being badly frightened while playing the piano (*displacement*). This same patient's hand-twitching was traced to two other memories (receiving a disciplinary strapping on the hands as a schoolgirl, and being forced to massage the back of a detested uncle: *condensation*). The symptom is often something 'physical', while the underlying cause is something 'mental' (*concrete representation*).

Most of Freud's patients were suffering from 'hysterical conversion neurosis' (or 'somatoform' disorders in current terminology): emotional energy is converted into a bodily form (such as paralysis, blindness, deafness, headaches and a whole variety of other 'physical' symptoms: see Chapter 44). The symptom deflects the patient's attention (and that of others) away from the repressed material: it's acceptable to consult a doctor about the symptom, but not about the unconscious wish. Freud & Breuer (1895) called these underlying wishes and memories *pathogenic* ('disease-producing') ideas, and Freud later concluded that all symptoms are caused by pathogenic ideas of a sexual nature (although not every dream).


STUDIEN

ÜBER

HYSTERIE

VON

DR. JOS. BREUER UND DR. SIGM. FREUD

IN WIEN.

LEIPZIG UND WIEN.
FRANZ DEUTICKE.
1895.

Cover of first edition of *Studies of Hysteria* (1895), by Breuer and Freud

Defence mechanisms

The *ego defence mechanisms* are, by definition, unconscious, and this is partly what makes them effective. They involve some degree of self-deception which, in turn, is related to their distortion of 'reality' (both internal and external). This prevents us from being overwhelmed by temporary threats or traumas, and can provide 'breathing space' in which to come to terms with conflict or find alternative ways of coping. As short-term measures, they're advantageous, necessary, and 'normal', but as long-term solutions to life's problems they're usually regarded as unhealthy and undesirable. Many of the defences described in Table 42.6 (and others) were originally proposed or implied by Freud and later elaborated by his daughter, Anna Freud (1936).

ASK YOURSELF...

- How are these defence mechanisms related to the *coping mechanisms* described by Grasha (1983) in relation to *stress?* (See Chapter 12.)

Levels of consciousness

According to Freud, thoughts, memories, and other psychic material could operate at one of three levels: *conscious, preconscious,* and *unconscious.* What we're consciously aware of at any one time represents the mere tip of an iceberg – most of our thoughts and ideas are either not accessible at that moment (preconscious) or are totally inaccessible (unconscious), unless special techniques such as free association and dream interpretation are used (see Chapter 45).

The ego represents the conscious part of the mind, together with some aspects of the superego (namely, those moral rules and values we're able to express in words: see Chapter 35). The unconscious comprises: (a) id impulses; (b) all repressed material; (c) the unconscious part of the ego (the part involved in dream work, neurotic symptoms, and defence mechanisms); and (d) part of the superego (for example, the vague feelings of guilt or shame which are difficult to account for). Freud depicted the unconscious as a *dynamic force* and not a mere 'dustbin' for all those thoughts and feelings which are too weak to force themselves into awareness. This is best illustrated by the process of repression (Thomas, 1985).

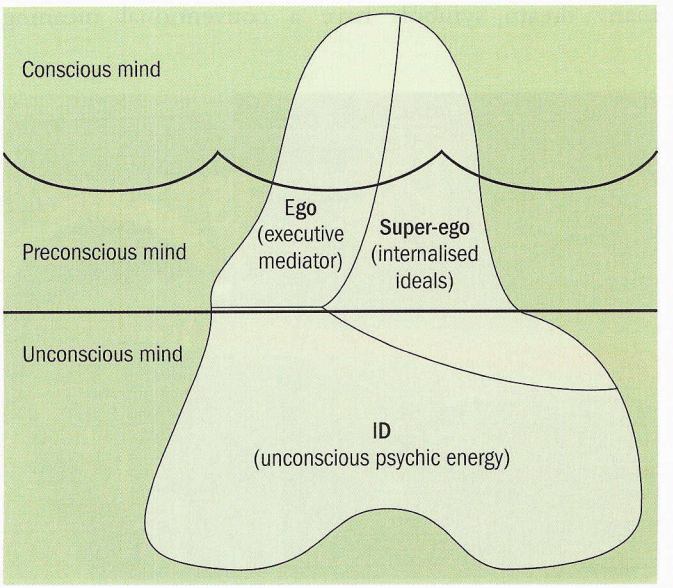


Figure 42.6 The components of the personality in relation to three levels of consciousness



Jack Nicholson, displacing in *As Good As It Gets*

Psychic determinism

Much of our behaviour (and our thoughts and feelings) has *multiple* causes, some conscious, some unconscious. Freud called this *overdetermination*. By definition, we know only about the conscious causes, which we normally take to be the reasons for our actions. But if some of the causes are also unconscious, then the reasons we give for our behaviour can never tell the whole story (and the unconscious causes may be the more important). This means that we don't know ourselves as well as we'd like, or as well as we think we do ('irrational man').

Overdetermination is one aspect of *psychic determinism*, the view that all behaviour is purposive or goal-directed and that everything we do, think and feel has a cause. It follows that so-called 'accidents' (things which 'just happen') do have a cause after all – and the cause may actually turn out to be the 'victim'. For instance, the 'accident-prone' person isn't an unfortunate victim of circumstances, but is unconsciously bringing the accidents about – perhaps in an attempt to punish him/herself in some way. While not denying the existence of events which lie beyond people's control, Freud believed that it's more common for an 'accident' to be the consequence of our own, unconscious wishes and motives.

The psychopathology of everyday life

Another important way in which our everyday behaviour provides us with glimpses of the unconscious is what Freud called *Fehlleistungen* ('faulty achievements': Bettelheim, 1985), the all too common slips of the tongue ('Freudian slips'), slips of the pen, forgetting things (including words and people's names), leaving

Table 42.6 Some major ego defence mechanisms

Name of defence mechanism	Description	Example(s)
Repression	Forcing a threatening or distressing memory/feeling/wish out of consciousness and making it unconscious	A five-year-old child repressing its incestuous desire for the opposite-sex parent (see Chapter 35)
Displacement	Transferring our feelings from their true target onto a harmless, substitute target (e.g. 'kicking the cat')	Frustration caused by problems at work expressed as domestic violence (see Chapter 29); phobias (see Chapter 44)
Denial	Failing/refusing to acknowledge/perceive some aspect of reality	Refusing to accept that you have a serious illness, or that your partner is going off you (see Chapter 39)
Rationalisation	Finding an acceptable excuse (a 'cover story') for some really quite unacceptable behaviour/situation	'Being cruel to be kind'; 'I only did it because I love you' (see Chapter 24)
Reaction-formation	Consciously feeling/thinking the opposite of your true (unconscious) feelings/thoughts	Being considerate/polite to someone you strongly dislike – even going out of your way to be nice to them
Sublimation	A form of displacement in which a (socially positive) substitute activity is found for expressing some unacceptable impulse	Playing sport to redirect aggressive urges (see Chapter 29)
Identification	Incorporating/introjecting another person into one's own personality – making them part of oneself	Identification with the aggressor (boys)/anaclitic identification (girls) (see Chapter 35)
Projection	Displacing your own unacceptable feelings/characteristics on to someone else	'I hate you' becomes (through reversal of subject/object) 'you hate me' (see Chapter 44)
Regression	Reverting to behaviour characteristic of an earlier stage of development	Losing your temper, comfort eating, sleeping more when depressed (see Chapter 44)
Isolation	Separating contradictory thoughts/feelings into 'logic-tight' compartments	Talking about some traumatic experience without any display of emotion – or even giggling about it (see Chapter 44)

things behind and 'accidents'. Freud's translators used the term *parapraxes.*

ASK YOURSELF...

- Try and think of some examples of Freudian slips that have happened to you or that you've witnessed.
- How can you explain them?

Box 42.8 Some examples of parapraxes ('Freudian slips') (from *The Psychopathology of Everyday Life,* 1901, 1976b)

1. A patient consulted me for the first time and from her history it became apparent that the cause of her nervousness was largely an unhappy married life. Without any encouragement she went into details about her marital troubles. She had not lived with her husband for about six months and she saw him last at the theatre, when she saw the play *Officer 606*. I called her attention to the mistake and she immediately corrected herself, saying that she meant to say *Officer 666* (the name of a recent popular play). I decided to find out the reason for the mistake, and as the patient came to me for analytic treatment, I discovered that the immediate cause of the rupture between herself and her husband was the disease which is treated by '606' [i.e. venereal disease].
2. I was to give a lecture to a woman. Her husband, upon whose request this was done, stood behind the door listening. At the end of my sermonising, which had made a visible impression, I said, 'Goodbye, sir!' To the experienced person I thus betrayed the fact that the words were directed towards the husband; that I had spoken to oblige him.
3. While writing a prescription for a woman who was especially weighted down by the financial burden of the treatment, I was interested to hear her say suddenly, 'Please do not give me big bills, because I cannot swallow them'. Of course she meant to say pills.

An evaluation of Freud's theory

Empirical studies

There have been literally thousands of empirical studies of various aspects of Freud's theory. Two of the major reviews of this research have been carried out by Kline (1972, 1982) and Fisher & Greenberg (1977). They conclude that psychoanalytic theory cannot be accepted or rejected as a total package. As Fisher and Greenberg say:

> It is a complex structure consisting of many parts, some of which should be accepted, others rejected and the rest at least partially reshaped.

Three basic kinds of study have been carried out:

- *validational studies,* which try to test directly various parts of the theory, mainly in the laboratory
- those that try to investigate some of the *underlying mechanisms* involved, but that aren't direct tests of the theory (again mainly laboratory experiments)
- studies of the *effects of psychoanalysis* as therapy (see Chapter 45).

Fonagy (1981) asks whether it's conceivable that laboratory studies could 're-create' the clinical concepts and experience that Freud describes and, therefore, questions the usefulness of validational studies. He also queries the relevance of studies of treatment effectiveness as a way of 'testing' the theory – they're equivalent to the relevance of the effectiveness of aspirin to a theory of headaches!

Many validational studies have been concerned with Freud's theory of personality types, especially the oral and anal (see Chapter 35) and defence mechanisms, including repression (see Chapters 12 and 21). Fonagy (1981) believes that most relevant are studies which go beyond trying to replicate clinical phenomena, and which instead attempt to identify basic mechanisms or processes which may underlie unconscious phenomena.

Is the theory scientific?

Popper's criticism that Freud's theory is *unfalsifiable* and, therefore, unscientific, is discussed in Chapter 2. However, it would be a serious mistake to regard *reaction formation* (the example used by Popper) as typifying Freudian theory, and the sheer volume of research suggests that Freudian theory cannot be dismissed as lightly as Popper and Eysenck would like on the grounds of it being 'unscientific'. According to Kline (1989), the view adopted by almost all experimental psychologists involved in the study of Freud's theory is that it should be seen as a collection of hypotheses. As Fisher & Greenberg (1977) argue, some of these hypotheses will turn out to be true, others false, when put to Popper's test of falsifiability.

Some hypotheses are undoubtedly more critical to the overall theory than others. For example, if no evidence could be found for repression, this would alter considerably the nature of psychoanalysis. But if it was found that the Oedipus complex was more pronounced in small as opposed to large families, the theory wouldn't be radically affected (Kline, 1989).

How valid is the case study method?

Although Freud often states or implies that his theories have been derived from his observations of his patients, he left us no direct record of the original data. He deliberately made no notes during therapy sessions, since this might interfere with the therapeutic relationship (see Chapter 45). He wrote them up several hours later, so that his case studies are *reconstructions* of what happened.

He also reported on very few patients; only 12 are reported in depth, and in some of these the details are incomplete (Stevens, 1995).

The case study relies on the reconstruction of childhood events, and, as used by Freud, is generally considered to be the least scientific of all empirical methods used by psychologists. It's open to many types of distortion and uncontrolled influences.

Box 42.9 The limitations of the case study method

- Fisher & Greenberg (1977) point out Freud's tendency to select or emphasise material which supported particular interpretations. This form of bias is blatantly obvious in the case of Little Hans. As we saw in Chapter 35, Freud (1909) recognised that there was a problem of objectivity, because it was Little Hans' father actually conducting the psychoanalysis. But he goes on to say that this case was no different from the analysis of adults:

  For a psychoanalysis is not an impartial scientific investigation, but a therapeutic measure. Its essence is not to prove anything but merely to alter something.

- Freud seems to be digging a very large hole for himself! According to Storr (1987), the majority of psychoanalytic hypotheses are based on observations made in the course of psychoanalytic treatment, which cannot be regarded as a scientific procedure. Such observations are inevitably contaminated by the subjective experience and prejudice of the observer, however detached s/he tries to be, and so they cannot be regarded in the same light as observations made during, say, a chemistry or physics experiment.

How representative were Freud's patients?

One of the standard criticisms made of Freud's database is that his patients were mainly wealthy, middle-class Jewish females, living in Vienna at the turn of the century. This makes them highly unrepresentative of the population to whom his theories were generalised. If these people were also neurotic, how can we be sure that what Freud discovered about them is true of normal individuals? However, Freud regarded neurosis as continuous with normal behaviour, that is, neurotics are suffering only from *more extreme* versions of problems experienced by all of us (see Chapter 43).

More serious, perhaps, is the criticism that Freud studied only adults (with the very dubious exception of Little Hans), and yet he put forward a theory of personality development. How many steps removed were his data from his theory? According to Thomas (1985), the analyst interprets, through his or her theoretical 'lens', ostensibly symbolic material derived from the reported dreams, memories, and so on of neurotics about apparent experiences stemming from their childhood one or more decades earlier. However, this in itself doesn't invalidate the theory; it merely makes the study of children all the more necessary.

Reification

Several writers have criticised terms like the id, ego and superego as bad metaphors. They don't correspond to any aspect of psychology or neurophysiology, and they encourage *reification,* that is, treating metaphorical terms as if they were 'things' or entities.

However, Bettelheim (1985) points out that much of Freud's terminology was mistranslated, and this has led to a misrepresentation of those parts of his theory. For example, Freud used the German terms *das Es* ('the it'), *das Ich* ('the I') and *das Über-Ich* ('the over-I'), which were intended to capture how the individual relates to different aspects of the self. The Latin terms *id, ego,* and *superego* tend to depersonalise these, and give the impression that there are three separate 'selves' which we all possess! The Latin words (chosen by his American translator to give them greater scientific credibility) turn the concepts into cold technical terms which arouse no personal associations. Whereas 'the I' can only be studied from the inside (through introspection), the 'ego' can be studied from the outside (as behaviour). In translation, Freud's 'soul' became scientific psychology's 'psyche' or 'personality' (Bettelheim, 1985).

The nature of Freudian theory

As noted in Chapter 2, Freud's theory has great *hermeneutic strength*, that is, it provides methods and concepts which enable us to interpret and 'unpack' underlying meanings (Stevens, 1995). Stevens claims that:

> Although Freud wanted to create a nomothetic theory ... in effect he finished up with a set of 'hermeneutic tools' – concepts and techniques that help us to interpret underlying meanings ...

There's no doubting the tremendous impact that Freud has had, both within psychology and outside. The fertility of psychoanalytic theory, in terms of the debate, research, and theorising it has generated, makes it one of the richest in the whole of psychology. According to Kline (1989):

> ... Freudian theory is still a powerful intellectual force. To claim that it is dead, as do many experimental psychologists – at least by implication for it rarely influences their thinking – must be either ignorance or wishful thinking.

Jung's analytical psychology

Structure of the personality and levels of consciousness

For Jung, the person is a whole almost from the moment of birth. Personality isn't acquired piece by piece (the 'jigsaw' concept) through learning and experience, but is already there. So, instead of striving to achieve wholeness,

our aim in life is to maintain it and to prevent the splitting or *dissociation* of the psyche into separate and conflicting parts. Jung saw the role of therapy as helping the patient recover this lost wholeness, and to strengthen the psyche so as to resist future dissociation.

The psyche comprises three major, interacting levels:

1. consciousness
2. the personal unconscious
3. the collective unconscious.

The distinction between 2 and 3 represents one of the major differences between Jung and Freud.

Consciousness

This is the only part of the mind known directly by the individual. It appears early in life through the operation of four basic functions: *thinking, feeling, sensing,* and *intuiting.* In addition, there are two attitudes which determine the orientation of the conscious mind: *extroversion* and *introversion.*

Box 42.10 Extroversion and introversion, Jungian style

- The extrovert's libido (Jung's term for psychic energy as a whole or life-force) is directed outwards towards the objective world of physical objects, people, customs and conventions, social institutions, and so on. Extroverts are preoccupied with interpersonal relationships, and are generally more active and outgoing.
- The introvert's libido is directed inwards towards the subjective world of thoughts and feelings, and they're preoccupied with intrapersonal matters, are introspective and withdrawn, and may be seen by others as aloof, reserved, and antisocial.
- Jung believed that a person is predominantly one or the other throughout life, although there may be occasional inconsistencies in different situations. So, for Jung, extroversion–introversion represents a typology of the 'either/or' variety. By contrast, as we saw above, Eysenck's 'adoption' of Jung's terms took the form of personality dimensions, with extreme extroversion at one end and extreme introversion at the other.

The development of consciousness is also the beginning of *individuation,* the process by which a person becomes psychologically 'in-dividual' (a separate, indivisible unit or whole). From this process emerges the ego, which refers to how the conscious mind is organised. It plays the essential role of 'gatekeeper to consciousness', selecting important sensations, feelings, and ideas, and allowing them through into conscious awareness (much as Freud's preconscious does). This prevents us from becoming overwhelmed by the mass of stimulation going on around (and inside) us. The ego provides a sense of identity and continuity, and is the central core of the personality.

The personal unconscious

The Freudian unconscious, in Jung's terms, is predominantly 'personal', that is, composed of the individual's particular and unique experiences which have been made unconscious through repression. For Jung, repressed material represents only one kind of unconscious content. The personal unconscious also includes things we've forgotten, as well as all those things we think of as being 'stored in memory' and which could become accessible by conscious recall (see Chapter 17).

Associated groups of feelings, thoughts and memories may cluster together to form a *complex,* a quite autonomous and powerful 'mini-personality' within the total psyche. The term is commonly used in everyday language, together with synonyms such as 'hang-up' (Hall & Nordby, 1973), and Freud's Oedipus complex illustrates this constellation of thoughts and feelings. Complexes often prevent complete individuation from taking place, and one aim of therapy is to free the patient from the grip of such complexes. In looking for the origin of complexes, Jung eventually turned to the collective unconscious.

The collective unconscious

This part of Jung's theory sets him apart from Freud probably more than any other. While Freud's id is part of each individual's personal unconscious and represents our biological inheritance, Jung believes that the mind (through the brain) has inherited characteristics which determine how a person will react to life experiences, and what type of experiences these will be. Unlike Freud, Jung attached relatively little importance to our individual past in relation to the personal unconscious, but saw the evolutionary history of human beings as a species as being all-important in relation to the *collective* (or *racial*) *unconscious.*

The collective unconscious can be thought of as a reservoir of *latent* (or *primordial*) *images.* These relate to the 'first' or 'original' development of the psyche, stemming from our ancestral past, human, pre-human, and animal (Hall & Nordby, 1973). These images are predispositions or potentialities for experiencing and responding to the world in the same way that our ancestors did. For example, we don't have to learn to fear the dark or snakes through direct experience, because we're naturally predisposed to develop such fears through the inheritance of our ancestors' fears.

These primordial images are also known as *archetypes* (a prototype or 'original model or pattern'). These are more like a photographic negative (which has to be developed through experience) than an already developed and clearly recognisable photograph (Hall & Nordby, 1973); they are 'forms without content', potential ways of perceiving, feeling and acting. Jung identified a large number of archetypes, including birth, rebirth, death, power, magic, the hero, the child, the trickster, God, the

demon, the wise old man, earth mother, and the giant. He gave special attention to the *persona,* the *anima/animus,* the *shadow,* and the *self.*

ASK YOURSELF...

- Is there any evidence from the study of phobias that supports Jung's account of the collective unconscious? (See Box 44.2, page 778.)



A demon from the Temple of the Emerald Buddha, Bangkok, Thailand

Box 42.11 The four major archetypes of the collective unconscious

The persona ('mask'): This is the outward face we present to the world, both revealing and concealing the real self. It allows us to play our part in social interaction, and to be accepted by others. It's the 'packaging' of the ego, the ego's PR man or woman, a kind of cloak between the ego and the objective world. It's very similar to the notion of a social role, which refers to the expectations and obligations associated with a particular social position. Jung describes it as the 'conformity' archetype.

Anima/animus: This refers to the unconscious mirror image of our conscious ('official') sex. If we're male, our anima is our unconscious female side, and if we're female, our animus is our unconscious male side. We all have qualities of the opposite sex – both biologically and psychologically – and in a well-adjusted person both sides must be allowed to express themselves in thought and behaviour.

The anima prefers all things vain, helpless, uncertain, and unintentional; the animus prefers the heroic, the intellectual, the artistic, and athletic. Jung believed that repression of the anima/animus is very common in western culture, where the persona predominates.

The shadow: This contains more of our basic animal nature than any other archetype. Like Freud's id, it must be kept in check if we're to live in society. But this isn't achieved easily, and is always at the expense of our creativity and spontaneity, depth of feeling and insight. So, the shadow represents the source of our creative impulses, but also of our destructive urges. When the ego and shadow work harmoniously, the person is full of energy, both mentally and physically. The shadow of the highly creative person may occasionally overwhelm the ego, causing temporary insanity (confirming the popular belief that genius is akin to madness: see Chapter 44).

The self: This is the central archetype ('the archetype of archetypes'), which unites the personality, giving it a sense of 'oneness' and firmness. The ultimate aim of every personality is to achieve a state of selfhood and individuation (similar to self-actualisation). This is a lifelong process, attained by very few individuals, Jesus and Buddha being notable exceptions. It is commonly represented as a *mandala,* an age-old symbol of wholeness and totality, found all over the world.



A mandala, the *Buddha of the Golden Wheel* (14th century)

According to Brown (1961), there are three major sources of evidence for the collective unconscious:

1. the 'extraordinary' similarity of themes in the mythologies of various cultures
2. the recurring appearance, in therapy, of symbols which have become divorced from any of the patient's personal experiences, and which become more and more like the primitive and universal symbols found in myths and legends
3. the content of fantasies of psychotics (especially schizophrenics), which are full of themes such as death and rebirth (similar to those found in mythology).

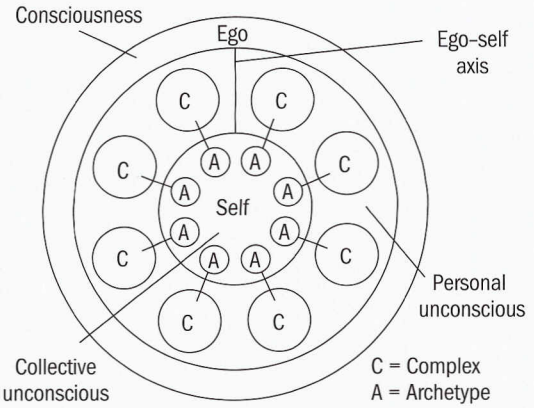


Figure 42.7 Schematic diagram of Jung's model of the psyche (based on Stevens, 1990)

Brown argues that members of all cultures share certain common experiences, and so it's not surprising that they dream or create myths about archetypal themes.

Dream theory

Jung shared Freud's belief that dreams are the 'royal road to the unconscious', but he disagreed with Freud that all dreams are wish fulfilments. Rather, Jung saw dreams as an important way of attaining self-knowledge which, in turn (together with religious or spiritual experiences), is a path to achieving individuation.

The great function of dreams is to re-establish 'the total psychic equilibrium' and they're just as likely to point to the future (by suggesting a solution to a conflict, for example) as to the past. He also believed that Freud's 'disguise' was far too elaborate, preferring to take dreams at face value. Dream symbols don't have a fixed meaning (as they very largely did for Freud), and Jung also advocated the study of *dream series,* that is, several dreams by the same individual recorded over a period of time.

Neurosis and therapy

Repression plays very little part in Jung's theory of neurosis. More important is the conflict between different parts of the personality which have developed unequally. Jungian therapy is much more concerned with future goals than past history, and the patient's present situation is the key to neurosis. Therapy aims to bring the patient into contact with the healing collective unconscious, largely through dream interpretation. Free association is also important, but the Jungian analyst, compared with the Freudian, plays a much more active role, and therapy is seen as a *cooperative venture* between patient and therapist (see Chapter 45).

CHAPTER SUMMARY

- Experimental/'general' psychology is concerned with psychological processes common to all human beings ('**universal norms**'). Personality differences represent one kind of '**group norm**' and reflect the **nomothetic approach**. The **idiographic approach** is concerned with discovering **individual/idiosyncratic norms**.
- Allport distinguished between **common** and **individual traits**. Individual traits can be **cardinal**, **central** and **secondary**. Most people possess a small number of central traits which compose the core of the personality.
- The nomothetic–idiographic distinction is based on a **false dichotomy**. They are increasingly being seen as complementary and interdependent approaches, and even Allport argued that both should be used together in order to achieve the aims of science.
- The **consistency controversy** was fuelled by Mischel, who rejected the **trait approach** in favour of **situationism**. **Interactionists** argue that all behaviour is the product of both personality and situational variables, and Mischel himself claims that it's the **psychological situation** that influences behaviour.
- **Orthogonal factor analysis** (FA) aims to identify a small number of powerful, **uncorrelated** factors (the method preferred by Eysenck), while **oblique** FA aims to identify a larger number of less powerful, **correlated** factors (preferred by Cattell).
- Eysenck uses the term 'type' for sets of correlated traits or **personality dimensions**, specifically **introversion–extroversion** (E), **neuroticism–stability** (N), which are both normally distributed, and **psychoticism** (P), which isn't.
- E, N and P are measured by the **Eysenck Personality Questionnaire** (EPQ). E and N are widely accepted as being reliable and valid, but there's much more doubt about P.
- Extroverts are chronically **under-aroused**, while introverts are chronically **over-aroused**. Compared with low N scorers, the sympathetic branch of the ANS reacts particularly strongly to stressful situations in high N scorers. The biological basis of P is much more uncertain, but male hormones may be involved.
- Introverts should be more easily **conditioned** than extroverts, but the evidence is equivocal. Eysenck assumes that conditionability is a unitary trait, but this has never been demonstrated and represents a weakness of the theory.
- Cattell has identified a number of **second-order**, surface traits, including **exvia–invia** and **anxiety**, corresponding to E and N respectively. Cattell claims that with psychiatric patients, Q-data reveal a **qualitative** difference between normals and psychotics.

- Compared with Eysenck, Cattell acknowledges the influence of situational factors on behaviour, as well as mood and state factors and motivational factors.
- There's a growing consensus that personality can be adequately described by five broad constructs/factors (the '**big five**'), namely **extroversion, agreeableness, conscientiousness, neuroticism/emotional stability** and **intelligence/openness to experience**.
- Kelly's **personal construct theory** (PCT) is both idiographic and phenomenological. The underlying model is **man the scientist. Personal constructs** are designed to make the world more predictable and controllable.
- PCT is more a total psychology than a personality theory. It's often called a **cognitive** theory of personality, and has been criticised for denying the subjective reality of emotional experience, as well as neglecting situational influences on behaviour.
- Like PCT, **humanistic theories** are rooted in **phenomenology** and **existentialism** and are concerned with uniquely human characteristics, including **self-actualisation**.
- The central concept in Rogers' theory is the **self**. Failure to maintain consistency between our self-image and our actions produces **incongruence**. Defence mechanisms may then be used, but these prevent the self from growing and changing, widening the gap between self-image and reality.
- To experience **positive self-regard**, our behaviour and experience must match our **conditions of worth**, but this can produce incongruence. The need for **positive regard** and positive self-regard are so strong that conditions of worth can supersede the values associated with self-actualisation.
- In **client-centred therapy**, the therapist provides **unconditional positive regard**, which enables the client to accept certain feelings and thoughts that are usually denied or distorted. In this way, **organismic values** gradually replace conditions of worth.
- Freud's **psychoanalytic theory** was the original **psychodynamic** theory, in which unconscious motivating forces play a central role. **Dreams, neurotic symptoms** and **defence mechanisms** represent three types of **compromise** through which the ego tries to meet the conflicting demands of the id and superego.
- **Dreams** consist of the **manifest content** and the **latent content** (the dream's meaning, namely, a **disguised wish fulfilment**). Dreams are created through **dream work**, with **symbols** playing a central role.
- **Neurotic symptoms** have a similar structure to dreams, which deflects the patient's attention away from the **pathogenic ideas** underlying the symptom.
- **Defence mechanisms** involve some degree of **self-deception** and **distortion of reality** which, in the short term, prevent us from being overwhelmed by anxiety. But as long-term solutions, they're unhealthy and undesirable.
- Our behaviour is **overdetermined** (one aspect of **psychic determinism**). The unconscious is revealed through **parapraxes**, including slips of the tongue ('Freudian slips').
- Freud's theories have generated a huge amount of empirical research. The most relevant studies are likely to be those which try to identify **mechanisms/processes** underlying unconscious phenomena.
- Psychoanalytic theory should be seen as a collection of hypotheses, some of which are more critical to the overall theory than others.
- Although Freud intended to produce a nomothetic theory, his work can be thought of as a set of **hermeneutic tools** that help to interpret underlying **meanings**. Although this kind of theory is difficult to test empirically, it has influenced our everyday understanding of ourselves.
- In Jung's **analytical psychology**, the Freudian unconscious is largely **personal**. It comprises much more than repressed material, including **complexes**.
- Complexes originate in the **collective/racial unconscious**, a reservoir of **primordial images** or **archetypes**, stemming from our ancestral past. Most important are the **persona, anima/animus**, the **shadow** and the **self**.
- Jungian **therapy** aims to bring the patient into contact with the healing collective unconscious, largely through dream interpretation.

Links with other topics/chapters

- Maslow's humanistic theory is probably best known for his *hierarchy of needs,* which is often discussed in relation to motivation (Chapter 5).
- The humanistic approach is one of the major *theoretical approaches* within psychology as a whole (Chapter 2).
- Eysenck's claim that differences between normals and neurotics/psychotics are quantitative (as opposed to qualitative) represents the *dimensional view of abnormality* (as opposed to the *categorical* view (Chapter 43).
- Eysenck (1995) points out that N and P represent only a *predisposition* ('diathesis'), unlike *neurosis* and *psychosis* which are actual *psychological disorders.* Under extreme stress, however, the predisposition can become a psychiatric illness (Claridge, 1985: Chapter 44).
- Lie scales (as used in the EPI) are used in *attitude scales* (Chapter 24).
- The effects of '*recreational*' *drugs* are usually discussed without taking individual differences such as personality into account (Chapter 8). In the case of

psychotropic drugs (used for treating psychological disorders), the focus is on the *disorder* (rather than the individual with the disorder) (Chapter 45).

- A way of testing the part of Eysenck's theory that deals with conditionability in the real world is through applying it to *criminality* (Chapter 46).
- Assessing personality through the use of forced-choice items on a questionnaire is an example of *reductionism* (Chapter 49).
- Traditionally, psychiatrists have distinguished between *neurotic disorders* (such as anxiety) and *psychotic disorders* (such as schizophrenia) (Chapter 43).
- A major criticism of *theories of social changes in ageing* is their neglect of individual differences. Instead of seeing all old people as the same, critics argue that we need to view how people age as continuous with their earlier personality (Chapter 39).
- Kelly's 'man the scientist' idea is consistent with Heider's common-sense psychology, which forms the basis of *attribution theory* (Chapter 23).
- *Dreams* and *dreaming* are an important feature of *rapid eye movement* (REM) *sleep* (Chapter 7).
- Both Freud and Skinner believed that *free will* is an illusion, although arguing from very different theoretical directions (Chapters 2 and 49).
- Jung's anima/animus archetype is related to Bem's concept of *psychological androgeny* (Chapter 36).

The concept of abnormality
- Abnormality as deviation from the average
- Abnormality as deviation from the norm
  - *Different kinds of norms*
- Abnormality as deviation from ideal mental health
- Abnormality as personal distress
- Abnormality as others' distress
- Abnormality as maladaptiveness
- Abnormality as unexpected behaviour
- Abnormality as highly predictable/unpredictable behaviour
- Abnormality as mental illness
  - *How valid is the medical model?*

The classification of mental disorders
- A brief history
- Comparing DSM-IV-TR and ICD-10
  - *Broad similarities and differences*
  - *Multi-axial classification*
  - *Neurosis and psychosis*
  - *The use of diagnostic criteria*
- Problems with the classification of mental disorder
  - *Reliability*
  - *Validity*

Conclusions: To classify or not to classify?
- The case for
- The case against
- Categories vs dimensions

Chapter summary

Links with other topics/chapters

43

PSYCHOLOGICAL ABNORMALITY: DEFINITIONS AND CLASSIFICATION



INTRODUCTION AND OVERVIEW

The emphasis in the preceding 42 chapters has been on normal psychological processes and development. However, we've also had occasion to qualify our discussion in two ways; first, by considering examples of abnormality (which also often serve to illuminate the normal); and second, by considering individual differences. This chapter brings these two issues together. Also, two whole chapters have been devoted to discussing abnormality in different ways: *substance abuse* (Chapter 8) and *exceptional development* (Chapter 40).

Clearly, normality and abnormality are two sides of a coin: each can be defined only in relation to the other. Also, implicit within this statement is the assumption that it's possible, and meaningful, to draw the line between normal and abnormal. Different criteria for defining normality/abnormality propose how and where the line can be drawn.

As we saw in Chapter 2, each of the major theoretical approaches discussed throughout this book – especially the *neurobiological/biogenic, psychodynamic, behavioural, humanistic,* and *cognitive* – defines psychological abnormality, and advocates ways of dealing with it, in its particular way. These will be discussed together in Chapter 45. By focusing here on the concept of abnormality itself, and how psychiatrists have attempted to classify mental disorders (*psychopathology:* see Chapter 44), we shall be discussing the *medical model.* This sees abnormality as *mental illness.*

THE CONCEPT OF ABNORMALITY

ASK YOURSELF...

- Try to think of some examples of people behaving in 'odd' or 'strange' ways.
- What does 'odd' or 'strange' really mean here?
- Would this behaviour be sufficient grounds for labelling the person – or their behaviour – as 'abnormal'?

Abnormality as deviation from the average

This represents the *literal* sense of abnormality, whereby any behaviour which isn't typical or usual (that is, infrequent) is, by definition, abnormal: 'normal' is 'average'. However, this *statistical criterion* doesn't help to distinguish between atypical behaviour which is desirable (or, at least, acceptable) and that which is undesirable and unacceptable. For example, creative genius (such as Picasso's) and megalomania (such as Hitler's) are both statistically rare (and according to this criterion abnormal), but the former would be rated as much more desirable than the latter.

Conversely, there are certain types of behaviour and experience which are so common as to be normal in the statistical sense, but which are regarded as constituting psychological disorders (such as anxiety and depression). So, the statistical criterion appears to be neither necessary nor sufficient as a way of defining abnormality.

Abnormality as deviation from the norm

The statistical criterion is insufficient because it's essentially *neutral;* that is, deviation from the average is neither good nor bad, desirable nor undesirable. *Deviation from the norm,* however, implies not behaving or feeling as one *should.* 'Norm' has an 'oughtness' about it: particular behaviours are expected from us at particular times and in particular situations, and if those expectations aren't met or are positively 'transgressed', we and/or our behaviour may be judged 'bad' or 'sick'.

For example, many people regard homosexuality as abnormal, not because it's statistically less common than heterosexuality, but because the 'normal' or 'natural' form of sexual behaviour in human beings is heterosexual. From a religious or moral perspective, homosexuality might be judged as 'bad', 'wicked' or 'sinful' (implying, perhaps, the element of choice). From a more biological or scientific perspective, it might be labelled 'sick', 'perverse' or 'deviant' (implying, perhaps, lack of choice).

Either way, even if it was found that a majority of men and women engaged in homosexual relationships (making *heterosexuality* abnormal according to the statistical criterion), these same people would still consider homosexuality a deviation from the norm and, therefore, abnormal. A further implication is that what's 'normal' is also 'desirable': unlike the statistical criterion, deviation from the norm doesn't allow for deviations which are also desirable.

Different kinds of norms

Within the same culture or society, a particular instance of behaviour may be considered normal or abnormal depending on the *situation* or *context.* For example, taking your clothes off is fine if you're about to step into a bath, but not if you're in the middle of a supermarket. However, *situational norms* aren't the only ones used to judge behaviour. *Developmental* (or *age*) *norms* dictate that, for instance, temper tantrums are perfectly normal in a two-year-old regardless of where they occur, but



Flagellants in the Philippines walk with bleeding wounds during an Easter re-enactment of Christ's crucifixion

decidedly abnormal in a 32-year-old (even in the privacy of his/her own home). *Cultural norms* are discussed below in relation to the ideal mental health criterion.

It's often far from obvious what norms are being broken when someone displays mental disorder: there's no law against being schizophrenic or having a panic attack, or being depressed, nor is it obvious what moral law or ethical principle is being broken in such cases. The kind of rule-breaking involved is discussed below in relation to the concept of mental illness.

Abnormality as deviation from ideal mental health

One way of 'fleshing out' the notion of desirability is to identify characteristics and abilities which people should possess for them to be considered normal. By implication, any lack or impoverishment of these characteristics and abilities constitutes abnormality or disorder.

Jahoda (1958) identified several ways in which mental health has been (or might be) defined, including:

- the absence of mental illness (clearly, a very negative definition)
- the ability to introspect, including the awareness of what we're doing and why
- the capacity for growth, development, and self-actualisation (as emphasised by Rogers and Maslow: see Chapters 9 and 42)
- integration of all the person's processes and attributes (e.g. balance between the id, ego and superego (Freud), and the achievement of ego identity (Erikson): see Chapters 37–39)
- the ability to cope with stress (see Chapter 12)
- autonomy (a concept that appears in many theories, including those of Erikson and Gould: see Chapter 38)
- seeing the world as it really is (part of Erikson's concept of ego identity)
- environmental mastery – the ability to love, work and play, to have satisfying interpersonal relationships, and to have the capacity for adaptation and adjustment (Erikson's ego identity again, and Freud's *lieben* und *arbeiten* – love and work).

ASK YOURSELF...

- Is it possible to construct a list of ideals that everyone would agree with?
- What's wrong with this approach to defining normality?

While many or all these criteria of mental health may seem valid and are intuitively appealing, their claim to be universal and absolute raises serious problems.

- According to these criteria, most of us would be considered maladjusted or disordered. For example, according to Maslow most of us don't achieve self-actualisation, so there's a fundamental discrepancy between these criteria and the statistical criterion (Mackay, 1975).
- Although many psychologists would accept these criteria, they're essentially *value judgements,* reflecting what's considered to be an ideal state of being human. By contrast, there's little dispute as to the precise nature of physical health. According to Szasz (1962), 'The norm is the structural and functional integrity of the human body', and if there are no abnormalities present, the person is considered to be in good health. Judgements about physical health don't involve making moral or philosophical decisions. 'What health is can be stated in anatomical and physical terms' (Szasz, 1962): ideal and statistical criteria tend to be roughly equivalent (Mackay, 1975).
- It follows that what's considered to be psychologically normal (and, hence, abnormal) depends upon the culture in which a person lives. Psychological normality and abnormality are *culturally defined* (unlike physical normality and abnormality which, Szasz believes, can be defined in universally applicable ways).



Oscar Wilde (1854–1900), the Irish writer, was imprisoned for homosexuality in 1895

CRITICAL DISCUSSION 43.1 Homosexuality – shifting definitions of abnormality

- DSM-II (the second edition of the American Psychiatric Association's [APA] official classification of mental disorders, published in 1968) included homosexuality as a sexual deviation.
- In 1973, the APA Nomenclature Committee, under pressure from many professionals and gay activist groups, recommended that the category should be removed and replaced with 'sexual orientation disturbance'. This was

to be applied to gay men and women who are 'disturbed by, in conflict with, or wish to change their sexual orientation'. The change was approved, but not without fierce protests from several eminent psychiatrists who maintained the 'orthodox' view that homosexuality is inherently abnormal.

- When DSM-III was published in 1980, another new term, *ego-dystonic homosexuality* (EDH) was used to refer to someone who is homosexually aroused, finds this arousal to be a persistent source of distress, and wishes to become heterosexual.
- Since homosexuality itself was no longer a mental disorder, there was no inclusion in DSM-III of predisposing factors (as there was for all disorders). But they *were* included for EDH, namely, the individual homosexual's internalisation of society's negative attitudes (*homophobia* – fear of homosexuals – and *heterosexism* – anti-homosexual prejudice and discrimination). So, according to DSM-III, a homosexual is abnormal if s/he has been persuaded by society's prejudices that homosexuality is inherently abnormal, but at the same time it denied that homosexuality in itself is abnormal (Davison *et al.*, 2004).
- Not surprisingly, no such category as 'ego-dystonic heterosexuality' has ever been used (Kitzinger, 1990). When DSM-III was revised (DSM-III-R, 1987), the APA decided to drop EDH (which was rarely used). However, one of the many 'dustbin' categories, 'sexual disorder not otherwise specified', includes 'persistent and marked distress about one's sexual orientation'; this has been retained in DSM-IV (1994) and DSM-IV-TR (2000).
- ICD-10 (1992), the latest edition of the World Health Organization's classification of diseases, also includes 'ego-dystonic sexual orientation' under 'disorders of adult personality and behaviour'.
- In the UK up until the 1960s, homosexuality among consenting adults was illegal; in 1995 the age of consent was lowered to 18. Clearly, nothing has happened to homosexuality itself during the last 30 years or so. What has changed are attitudes towards it, which then became reflected in its official psychiatric and legal status. Homosexuality *in itself* is neither normal nor abnormal, desirable nor undesirable, and this argument can be extended to behaviour in general.

Abnormality as personal distress

From the perspective of the individual, abnormality is the subjective experience of intense anxiety, unhappiness, depression, or a whole host of other forms that personal distress/suffering can take. While this may often be the only indication that anything is wrong (and may not necessarily be obvious to others), it may be a sufficient reason for seeking professional help. As Miller & Morley (1986) say:

> People do not come to clinics because they feel they have met some abstract definition of abnormality. For the most part they come because their feelings or behaviour cause them distress ...

However, the converse is also sometimes true: someone whose behaviour is obviously 'mad' as far as others are concerned may be oblivious of how others see them and may experience *no* subjective distress. This is sometimes referred to as *lack of insight* and is a feature of *psychosis* (see Table 43.4, page 767).

Abnormality as others' distress

If the person seen by others as behaving abnormally is the last to recognise there's a problem, then others' concern may act as a counterbalance to his/her lack of insight. This suggests, as with all behaviour, that abnormality is *interpersonal* and not simply *intrapersonal/intrapsychic*. In other words, it takes place *between* people, in social situations, and isn't merely a reflection of an individual actor's personal qualities or characteristics (see Chapter 42).

From a practical and ethical perspective, this is a double-edged sword: others' distress may be both a 'blessing' (literally a life-saver, as in the case of someone who's unaware of the self-destructive nature of his/her drug abuse) and a curse (such as when a parent is distressed about a son or daughter's homosexuality, with which the person may feel perfectly comfortable). The former could be called *empathic concern*, where the 'helper' has an altruistic desire to reduce the other's distress, while in the latter, the helper's *personal distress* produces an egoistic desire to reduce his/her own distress. The question is, whose distress is the helper trying to reduce?

Abnormality as maladaptiveness

Behaviour may be seen as abnormal if it prevents people from pursuing and achieving their goals, or doesn't contribute to their personal sense of well-being, or prevents them from functioning as they would wish in their personal, sexual, social, intellectual and occupational lives. For example, drug abuse (or substance-related disorder) is defined mainly by how it produces social and occupational disability, such as poor work performance and serious marital arguments. Similarly, a fear of flying might prevent someone from taking a job promotion (Davison & Neale, 1994).

Although the emphasis here is on the *consequences* of the behaviour, such behaviours may be very distressing in themselves for the person concerned. For example, phobias are negative experiences, because they involve intense fear, regardless of any practical effects brought about by the fear.

Abnormality as unexpected behaviour

According to Davison *et al.* (2004), it's abnormal to react to a situation or event in ways that couldn't be (reason-

ably) predicted, given what we know about human behaviour. For example, *anxiety disorders* are diagnosed when the anxiety is 'out of proportion to the situation'. The problem with this criterion is: who decides what's 'in proportion'? Is it just another form of deviation from the average, whereby what's reasonable or acceptable is simply how most people would be expected to behave? By this definition, *under-reacting* is just as abnormal as over-reacting, and yet only the latter is usually seen as a problem.

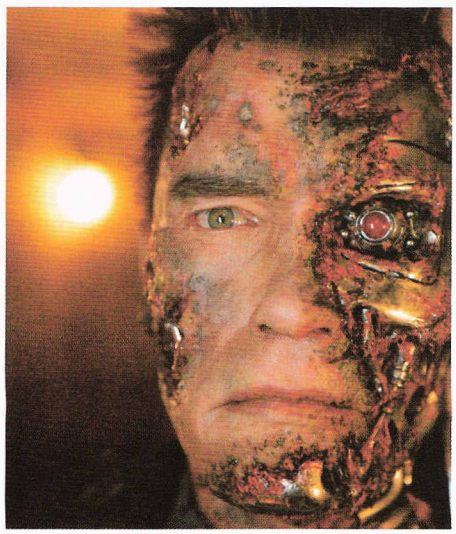
Abnormality as highly predictable/unpredictable behaviour

ASK YOURSELF...

- In light of the discussion of the *consistency controversy* in Chapter 42 (see pages 734–736), how might abnormality be defined in terms of the consistency of behaviour?

If we have generalised expectations about people's typical reactions to particular kinds of situation, then a person's behaviour is predictable to the extent that we know about the situation. However, not all situations are equally powerful influences on behaviour, and so cannot be used equally to predict a person's behaviour. It follows that it's normal for any individual's behaviour to be only *partially* predictable or consistent and, in turn, that it's abnormal for a person to display either *extremely predictable* or *extremely unpredictable* behaviour.

If people act so consistently that they seem to be unaffected by situations (including the other people involved), it's almost as if they're machines (or *automata*). For example, someone suffering from *paranoid delusions* may see the world entirely in terms of others' harmful intentions.



Arnold Schwarzenegger in *Terminator*

This may, in turn, elicit certain kinds of responses in others, which may reinforce the delusions. According to Smith *et al.* (1986), people with behaviour disorders are unable to modify their behaviour in response to changing environmental requirements; their behaviour is maladaptive because it's inflexible and unrealistic. Equally, someone whose behaviour is very unpredictable is very difficult to interact with. People with *schizophrenia* are often perceived as embodying this kind of unpredictability, which is unnerving and unsettling – for others!

Abnormality as mental illness

Many writers (e.g. Maher, 1966) have pointed out that the vocabulary we use to refer to psychological disorder is borrowed from medical terminology: deviant behaviour is referred to as *psychopathology,* is classified on the basis of *symptoms,* the classification being called a *diagnosis,* the methods used to try to change the behaviour are called *therapies,* and these are often carried out in *mental* or *psychiatric hospitals.* If the deviant behaviour ceases, the patient is described as *cured.*

Other related terms are *syndrome, prognosis,* and *in remission.* This way of talking about psychological abnormality reflects the pervasiveness of a 'sickness' (or medical) model. Whether we realise it or not, when we think about abnormal behaviour we tend to think about it as if it were indicative of some underlying illness.

How valid is the medical model?

ASK YOURSELF...

- Try to formulate arguments for and against seeing abnormal behaviour as indicating mental illness.

Many defenders of the medical model have argued that it's more humane to regard a psychologically disturbed person as sick (or mad) than plain bad (it's more stigmatising to be regarded as morally defective: Blaney, 1975). However, when we label people as sick or ill, we're removing from them all responsibility for their behaviour. Just as we don't normally hold someone responsible for having cancer or a broken leg, so 'mental illness' implies that something has *happened to* the person. S/he is a victim who is, accordingly, put in the care (and often the custody) of doctors and nurses who'll take over responsibility.

The stigma attached to mental illness may actually be *greater* than that attached to labels of 'bad', because our fear of mental illness is even greater than our fear of becoming involved in crime or other immoral activities. This, in turn, is based on our belief that while illness 'just happens to people' (we've no control over it), at least there's some degree of *choice* involved in criminal activity.

CRITICAL DISCUSSION 43.2 Is psychiatry value-free?

- As we saw in relation to homosexuality (see Critical Discussion 43.1), norms change within the same culture over time. Hence, the criteria used by psychiatry to judge abnormality must be seen in a *moral context*, not a medical one (Heather, 1976). Psychiatry's claim to be an orthodox part of medical science rests upon the concept of mental illness, but far from being another medical speciality, psychiatry is a 'quasi-medical illusion' (Heather, 1976).
- Similarly, Szasz (1962) argues that the norms from which the mentally ill are thought to deviate have to be stated in psychological, ethical, and legal terms, and yet the remedy is sought in terms of medical measures. For this reason, Szasz believes that the concept of mental illness has replaced beliefs in demonology and witchcraft:

  Mental illness thus exists or is 'real' in exactly the same sense in which witches existed or were real ...

- It also serves the same *political* purposes. Whenever people wish to exclude others from their midst, they attach to them stigmatising labels (e.g. 'foreigner', 'criminal', 'mentally ill') (Littlewood & Lipsedge, 1997). Unlike people suffering from physical illness, most people considered to be mentally ill (especially those 'certified' or 'sectioned' and so legally mentally ill) are so defined by *others* (relatives, friends, employers, police, and so on). They've upset the social order (by violating or ignoring social laws and conventions), and so society labels them as mentally ill and (in many cases) 'punishes' them by committing them to a mental hospital (Szasz, 1974).



During the Middle Ages, what we'd now call mental disorder was seen as possession by the Devil or as witchcraft

Diagnostic labelling as a form of control

As we noted earlier, people considered to be 'mentally ill' are often unpredictable, something others find disturbing. Indeed, it's usually others who are disturbed by the patient's behaviour, rarely the patient (Laing, 1967). Attaching a diagnostic label represents a 'symbolic recapture' and this may be followed by a physical capture (hospitalisation, drugs, and so on: Szasz, 1974).

While medical diagnosis usually focuses only on the damaged or diseased parts of the body, psychiatric diagnosis describes the *whole person* – someone doesn't 'have' schizophrenia but *is* schizophrenic. This represents a new and total identity, which describes not only the person but also how s/he should be regarded and treated by others. Psychiatric diagnosis, therefore, is a form of *action*. (We should note that DSM-IV-TR explicitly *rejects* the use of labels such as 'schizophrenic', and recommends instead 'an individual with schizophrenia'.)

What are schizophrenics doing wrong?

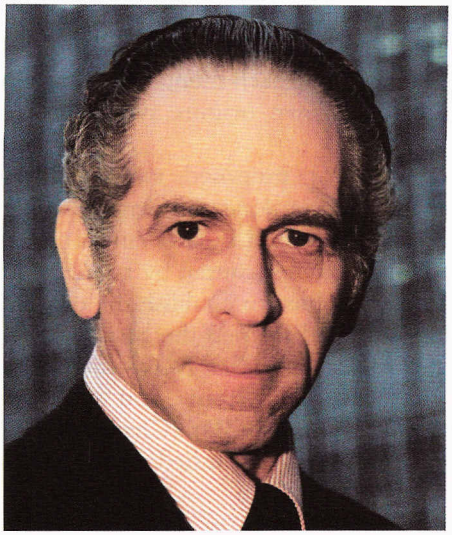
In what ways are schizophrenics unpredictable, and what kinds of rules are they breaking? According to Scheff (1966), they're breaking *residual rules,* the 'unnameable' expectations we have regarding such things as 'decency' and 'reality'. These rules are themselves implicit, taken for granted and not articulated, which makes behaviour that violates them difficult to understand and also difficult to articulate. This is what makes it seem strange and frightening.

According to Becker (1963), psychiatric intervention is based, generally speaking, on middle-class values regarding decent, reasonable, proper behaviour and experience. These are then applied to working-class patients, who constitute the vast majority of the inmates of psychiatric hospitals.

Mental illness or problems in living?

Szasz (e.g. 1962) is probably the most radical critic of the concept of mental illness. He argues that the basic assumption made by psychiatrists is that 'mental illness' is caused by diseases or disorders of the nervous system (in particular, the brain), which are revealed in abnormal thinking and behaviour. If this is the case, it would be better to call them 'diseases of the brain' or *neurophysiological disorders.* This would then get rid of any confusion between physical, organic defects (which must be seen in an anatomical and physiological context) and 'problems in living' the person may have (which must be seen in an ethical and social context).

Szasz argues that the vast majority of cases of 'mental illness' are actually cases of problems of living. It's the exception rather than the rule to find a 'mentally ill' person who's actually suffering from some organic brain disease (such as in Alzheimer's disease, or alcohol poisoning). This has traditionally been recognised by psychiatrists themselves, who distinguish between *organic*



Thomas Szasz (born 1920)

and *functional psychosis*. 'Functional' means that there's no demonstrable physical basis for the abnormal behaviour and that something has gone wrong with how the person functions in the network of relationships which make up their world (Bailey, 1979).

However, many psychiatrists believe that medical science will, in time, identify the physical causes of functional disorders (which include schizophrenia and psychotic depression). Indeed, many claim that this point has already been reached (see Chapter 44). Yet according to Heather (1976), such evidence wouldn't cover all major categories of mental disorder (in particular, neurosis and personality disorder). Not even the most organically oriented psychiatrists would claim that these are bodily diseases in any sense!

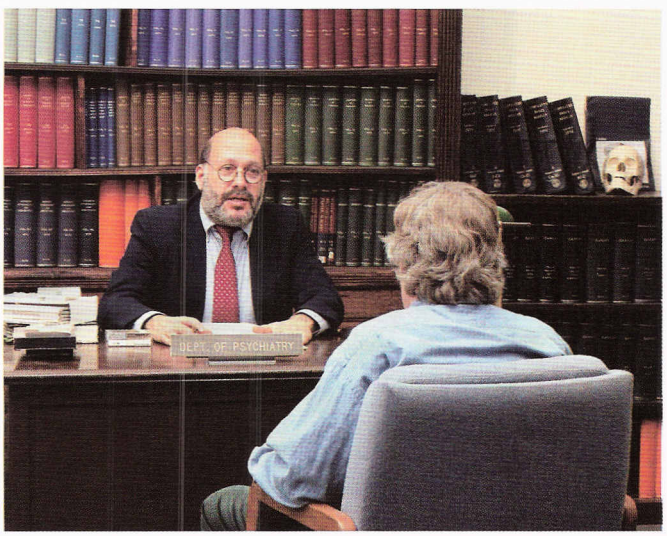
Box 43.1 Does the concept of mental illness make sense?

- If, in most cases, it's not the brain that's diseased, in what sense can we think of the mind as being diseased? For Szasz, it's only in a *metaphorical* sense that we can attribute disease to the mind. In a literal sense, it's logically impossible for a non-spatial, non-physical mind to be suffering from a disorder of a physicochemical nature.
- Szasz doesn't deny that the problem behaviours that mental health professionals see as indicative of mental illness are often strange, irritating, and deviant. They may also be distressing for the person concerned. But they're *not* a symptom of underlying brain disease.
- According to Bailey (1979), medicine began by classifying such things as syphilis and tuberculosis as illnesses, all sharing the common feature of a state of disordered structure and/or functioning of the human body as a physicochemical machine. The mistake was to keep adding items to this list which aren't illnesses in this sense. Agreeing with Szasz, Bailey maintains that:
  - organic mental illnesses *aren't* mental illnesses at all but physical illnesses, in which mental symptoms are manifested and which aid diagnosis and treatment
  - functional mental illnesses aren't illnesses but *disorders of psychosocial or interpersonal functioning* (Szasz's 'problems in living'), in which mental symptoms are important in deciding the type of therapy the patient requires.

Diagnosis in general medicine and psychiatry

An important difference between diagnosis in general medicine and psychiatry is in the role of *signs* and *symptoms*. When doctors diagnose physical illnesses, they look for signs of disease (the results of objective tests, such as blood tests and X-rays, as well as physical examination) and symptoms (the patient's report of pain, and so on). They tend to attach more weight to the former. By contrast, psychiatrists are much more at the mercy of symptoms. Although psychological tests are the psychiatric equivalent of blood tests and X-rays, they're nothing like as reliable and valid (see Chapters 41 and 42) and, in practice, the psychiatrist will rely to a large extent on the patient's own description of the problem.

However, observation of the patient's behaviour, talking to relatives and others about the patient's behaviour and, increasingly, the use of brain-scanning techniques (such as CAT and PET: see below and Chapter 4) also contribute data regarding the signs of the illness. This is especially true in the case of serious disorders, such as schizophrenia. Nevertheless, the two major classification systems used by psychiatrists today, DSM and ICD, are based largely on the abnormal experiences and beliefs reported by patients, because we have no objective or biological markers for most neurotic or psychotic disorders (Frith & Cahill, 1995).



A patient being assessed by a psychiatrist

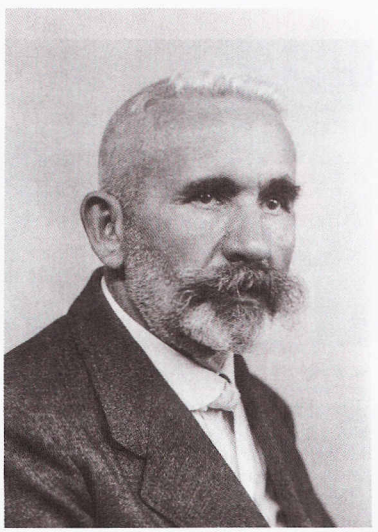
During the late 1970s, the APA considered including a formal statement in DSM-III (1980) to the effect that mental disorders are a subset of medical diseases (Lilienfeld, 1995). While this proposal was eventually rejected, it sparked a storm of protests from psychologists, as well as many psychiatrists. The implication of the proposal was that the distinction between organic and functional disorders is invalid, and that all disorders are organic.

A major change that took place in DSM-IV (1994) compared with DSM-III-R (1987) was the removal of the category of 'organic mental disorders' and its replacement with 'delirium, dementia, amnesic and other cognitive disorders' (see Table 43.1). According to Davison & Neale (1994), the thinking behind this change is that the term 'organic' implies that the other major categories don't have a biological basis. Since research has shown the influence of biological factors through a whole range of disorders, it's now considered misleading to use the term 'organic'. To this extent, the concept of psychological abnormality is even more *medicalised* than it's ever been. However, ICD retains a separate category for organic disorders.

THE CLASSIFICATION OF MENTAL DISORDERS

A brief history

An integral part of the medical model is the classification of mental disorder and the related process of diagnosis. All systems of classification stem from the work of Kraepelin, who published the first recognised textbook of psychiatry in 1883. Kraepelin claimed that certain groups of symptoms occur together sufficiently often for them to be called a 'disease' or syndrome. In other words, there's an underlying physical cause, just as a physical disease may be attributed to a physiological dysfunction (Davison *et al.*, 2004). He regarded each mental illness as distinct from all others, with its own origins, symptoms, course, and outcome.



Emil Kraepelin (1856–1926)

Kraepelin (1896) proposed two major groups of serious mental diseases: *dementia praecox* (the original term for schizophrenia), caused by a chemical imbalance, and *manic–depressive psychosis* (caused by a faulty metabolism). His classification helped to establish the organic nature of mental disorders, and formed the basis for the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), the APA's official classification system, and the *International Classification of Diseases* (ICD) (Chapter 5: 'Mental and behavioural disorders') published by the World Health Organization.

DSM-I was published in 1952, DSM-II in 1968, followed by DSM-III (1980), DSM-III-R (1987), DSM-IV (1994), and DSM-IV-TR (2000: TR stands for 'Text Revision'). Mental disorders were included in ICD for the first time in 1948 (ICD-6) and ICD-10 was published in 1992. Table 43.1 shows the major categories of both ICD-10 and DSM-IV-TR. Table 43.2 shows ten major categories, with examples of specific disorders based on both classification schemes.

Kraepelin's classification is also embodied in the Mental Health Act 1983 (in England and Wales). The Act identifies three major categories of mental disturbance/disorder, namely, *mental illness* (neurosis and psychosis, the latter subdivided into organic and functional), *personality disorder* (including psychopathy), and *mental impairment*.

Comparing DSM-IV-TR and ICD-10

Broad similarities and differences

Table 43.1 shows how the two systems overlap. One of the major differences between them is the number of major categories. Most differences arise because DSM-IV-TR uses a larger number of discrete categories to classify disorders that appear under a smaller number of more general categories in ICD-10. However, this is also reversed in one instance, as shown in Figure 43.2 (see page 766).

Neither system actually uses the term 'mental illness'. Instead, they use the term *mental disorder,* which is defined by DSM-IV-TR as:

> A clinically significant behaviour or psychological syndrome or pattern that occurs in a person and that is associated with present distress (a painful symptom) or disability (impairment of one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom. In addition, this syndrome or pattern must not be merely an expectable response to a particular event, for example, the death of a loved one ... (APA, 2000)

Table 43.1 The major categories of mental disorder as identified by DSM-IV-TR and ICD-10

DSM-IV-TR	ICD-10
1 Delirium, dementia, amnesic and other cognitive disorders	**1** Organic, including symptomatic, mental disorders
2 Schizophrenic and other psychotic disorders	**2** Schizophrenia, schizotypal and delusional disorders
3 Substance-related disorders	**3** Mental and behavioural disorders due to psychoactive substance use
4 Mood disorders	**4** Mood (affective) disorders
5 Anxiety disorders	**5** Neurotic, stress-related and somatoform disorders
6 Somatoform disorders	
7 Dissociative disorders	
8 Adjustment disorders	
9 Disorders usually first diagnosed in infancy, childhood or adolescence including mental retardation – (Axis II)*	**6** Behavioural and emotional disorders with onset usually occurring in childhood and adolescence
	7 Disorders of psychological development
	8 Mental retardation
10 Personality disorders (Axis II)*	**9** Disorders of adult personality and behaviour
11 Sexual and gender identity disorders	
12 Impulse control disorders not elsewhere classified	
13 Factitious disorders	
14 Sleep disorders	**10** Behavioural syndromes associated with physiological disturbances and physical factors
15 Eating disorders	
16 Other conditions that may be a focus of clinical attention	**11** Unspecified mental disorder

* see Table 43.3

'Mental disorder' is used by ICD-10:

> ... to imply the existence of a clinically recognisable set of symptoms or behaviour associated in most cases with distress and with interference with personal functions ... (WHO, 1992)

Although we noted earlier that DSM has become more organic in its approach, Cooper (1994) argues that only a few psychiatric diagnoses are associated with disturbed anatomy or physiology. Use of the term 'disorder' avoids the need to debate the meaning or value of 'disease' or 'illness'.

Table 43.2 Major categories of mental disorder, with examples, based on DSM-IV-TR and ICD-10

Organic mental disorders: Delirium. Dementia due to: Alzheimer's disease; Creutzfeldt–Jakob disease (human version of BSE: 'mad cow disease'); HIV; Huntington's chorea; Parkinson's disease. Brain infections. Brain tumours. Brain damage
Schizophrenia and related psychotic disorders: Schizophrenia: paranoid; hebephrenic (disorganised); catatonic; simple; undifferentiated. Schizotypal disorder. Delusional disorder (paranoia). Schizophreniform disorder. Schizoaffective disorder. Brief reactive psychosis
Psychoactive substance use disorders: Intoxication, harmful use/abuse, dependence, withdrawal state re: alcohol; amphetamines; caffeine (and other stimulants); cannabis (cannabinoids); cocaine; hallucinogens; inhalants/volatile solvents; tobacco (nicotine); opioids; sedatives/hypnotics/anxiolytics; phencyclidine
Mood (affective) disorders: Depressive disorder (unipolar); manic disorder (bipolar 1); bipolar 2 disorders; mood disorder with seasonal pattern (seasonal affective disorder/SAD); mood disorder with postpartum onset (postnatal depression); premenstrual dysphoric disorder (premenstrual disorder/PMD); dysthymic disorder; cyclothymic disorder
Neurotic disorders: Anxiety disorders. Phobic anxiety disorders. Obsessive-compulsive disorders. Panic disorder. Dissociative disorders: dissociative amnesia (psychogenic amnesia); dissociative fugue (psychogenic fugue); dissociative identity disorder (multiple personality disorder); depersonalisation. Somatoform disorders. Hypochondriasis. Post-traumatic stress disorder
Disorders of infancy, childhood and adolescence: Autistic disorder. Attention-deficit/disruptive behaviour disorders: hyperkinetic disorder; conduct disorder. Separation anxiety disorder. Elective mutism. Tic disorders (e.g. Tourette's disorder). Enuresis. Encopresis. Stuttering. Disorders of speech and language. Specific developmental disorders of scholastic skills. Learning disorders
Mental retardation: Mild/Moderate/Severe/Profound. Associated with: genetic (e.g. chromosome) abnormalities; gross disease of the brain; antenatal damage; perinatal damage; postnatal damage; malnutrition
Personality disorders (disorders of adult personality): Antisocial (psychopathic). Paranoid. Schizoid (schizotypal). Anxious/avoidant. Dependent. Obsessive–compulsive. Emotionally unstable. Histrionic. Narcissistic. Pathological gambling. Pyromania. Kleptomania. Trichotillomania. Factitious disorder
Eating and sleeping disorders: Anorexia nervosa. Bulimia nervosa. Insomnia. Hypersomnia. Sleepwalking (somnambulism). Sleep (night) terrors
Sexual and gender identity disorders: Sexual desire disorders. Sexual arousal disorders. Paraphilias: exhibitionism; fetishism; voyeurism; paedophilia; frotteurism; transvestism; sexual sadism; sexual masochism. Transsexualism

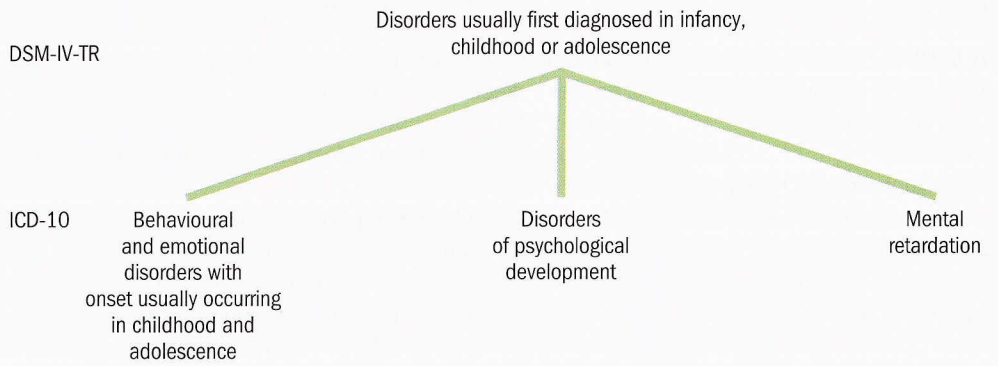


Figure 43.2 An example of how a general DSM-IV-TR category incorporates three ICD-10 categories

Multi-axial classification

DSM-IV-TR

One of the major changes made in DSM-III (1980) compared with DSM-II (1968), was the introduction of a *multi-axial system* of classification. Whereas DSM-II required only a simple diagnostic label (e.g. 'schizophrenia' or 'anxiety neurosis'), DSM-III (and subsequent editions) instructed the psychiatrist to evaluate the patient on five different axes, which represent different areas of functioning (see Table 43.3).

The inclusion of the axes reflects the assumption that most disorders are caused by the *interaction* of biological, psychological, and sociological factors. Instead of simply placing someone in a single clinical category (e.g. schizophrenia), the patient is assessed much more broadly, giving a more global and in-depth picture. While axes 1–3 are compulsory, 4 and 5 are optional. An important change made in DSM-IV compared with DSM-III-R was the 'return' of most developmental disorders to Axis I, with the exception of mental retardation.

ICD-10

According to Cooper (1994), it's often assumed that ICD-10 has only a single axis. However, although it doesn't have separate axes in the way that DSM has, built into the groupings of the disorders are broad types of *aetiology* (causal factors), such as organic causes, substance use and stress.

When ICD-10 was being constructed, it was agreed that, because of the incomplete and often controversial state of knowledge about the aetiology of most psychiatric disorders, the classification would be worked out on a *descriptive* basis. This implies, strictly, that disorders should be grouped according to similarities and differences of symptoms and signs, so that a particular disorder should occur in only one place. But it soon became clear that this wouldn't appeal to clinicians, who like to be able to give prominence to aetiology wherever possible (hence the inclusion of the broad types of aetiology within the categories). Although this makes ICD-10 impure from a *taxonomic* (classificatory) point of view, it's

Table 43.3 The five axes of DSM-IV-TR

Axis I: Clinical syndromes (diagnostic category) **and other conditions that may be a focus of clinical attention**	This lists all mental disorders and the criteria for rating them, except personality disorders and mental retardation. 'Other conditions' may include problems related to abuse or neglect, academic problems, and 'phase of life' problems
Axis II: Personality disorders; mental retardation	These life-long, deeply ingrained, inflexible and maladaptive traits and behaviours may occur quite independently of Axis I clinical syndromes
Axis III: General medical conditions	Any medical condition that could affect the patient's mental state. For example, how might heart disease/diabetes/cancer affect mood and cognitive abilities, as well as response to treatment?
Axis IV: Psychosocial and environmental problems	Stressful events that have occurred within the previous year (e.g. divorce, death of parent or spouse), which could be contributory factors and/or which might influence the course of treatment. Rated on a scale of 1–7 (7 indicates 'catastrophic')
Axis V: Global assessment of functioning	How well has the patient performed during the previous year, in social relationships, leisure activities and at work? On the global assessment of functioning scale, 0 denotes 'persistent danger', 100 denotes 'superior functioning'

much more likely to be used by clinicians (Cooper, 1994). In DSM-IV-TR, assumptions about causation *aren't* used in making a diagnosis (it's *atheoretical*).

Neurosis and psychosis

Both systems have dropped the traditional distinction between neurosis and psychosis, although ICD-10 retains the term 'neurotic' and DSM-IV-TR retains the term 'psychotic'. According to Gelder *et al.* (1989, 1999), there are four major reasons for getting rid of the distinction:

- there are exceptions to all the criteria used to distinguish them (see Table 43.4 below)
- disorders included under the broad categories of 'neurosis' or 'psychosis' have little in common
- it's less informative to classify a disorder as neurotic or psychotic than to classify it as a particular disorder within that very broad category (e.g. 'schizophrenic' is more informative than 'psychotic')
- DSM-III wanted to remove the psychoanalytic influence in the way 'neurotic' was used and understood (based on Freud's theories); but in everyday psychiatric practice they're convenient terms for disorders which cannot be given more precise diagnoses, and also the terms are still in general use (as in 'antipsychotic drugs' and when referring to symptoms).

Table 43.4 The major criteria for making the traditional distinction between neurosis and psychosis

Neurosis	Psychosis
Only part of the personality is involved/affected	The whole personality is involved/affected
Contact with reality is maintained	Contact with reality is lost, e.g. hallucinations and delusions represent the inability to distinguish between subjective experience and external reality
Neurotics have *insight* (that is, recognise they have a problem)	Psychotics lack insight
Neurotic symptoms/behaviour can be seen as an exaggeration of 'normal' behaviour (the difference is *quantitative*)	Psychotic symptoms/behaviour are discontinuous with 'normal' behaviour (the difference is *qualitative*)
Often begins as response to a stressor	There's usually no precipitating cause
The neurotic disturbance is related to the patient's previous personality (the premorbid personality)	The psychotic disturbance *isn't* related to the patient's premorbid personality
Treated mainly by *psychological* methods	Treated mainly by *physical* (somatic) methods

Table 43.4 implies that psychosis is a very much more serious form of mental disorder than neurosis. According to Frith & Cahill (1995), psychosis is the technical term for what the lay person calls madness. In contrast to the symptoms of neurosis, psychotic symptoms (in particular delusions, hallucinations, passivity experiences, and thought disorder) are outside the normal realm of experience and, as such, are outside our common-sense powers of understanding and empathy. It's these aspects of psychotic symptoms that isolate the person in 'a world of their own'.



Bethlam Royal Hospital, London ('Bedlam'), the world's oldest institution for those with mental disorders

Schizophrenia is by far the commonest of the psychoses: the lifetime risk of having a schizophrenic breakdown is 0.5–2 per cent, compared with 0.6–1.1 per cent for affective psychosis, and, despite powerful drugs, about two-thirds of schizophrenics suffer recurring episodes. Delusions are by far the commonest of the psychotic symptoms. According to Jasper (1962, in Frith & Cahill, 1995):

> Since time immemorial, delusion has been taken as the basic characteristic of madness. To be mad was to be deluded.

The use of diagnostic criteria

Both DSM and ICD have introduced explicit operational criteria for diagnosis (based on Spitzer *et al.*'s, 1978, *Research Diagnostic Criteria*). For each disorder, there's a specified list of symptoms, all or some of which must be present, for a specified period of time, in relation to age and gender, stipulation as to what other diagnoses mustn't be present, and the personal and social consequences of the disorder. The aim is to make diagnosis more reliable and valid (see below) by laying down rules for the inclusion or exclusion of cases.

Cultural influences on mental disorder

Cooper (1994) asks whether the *social consequences* should be included among the defining features of a disorder itself, especially within an internationally used system such as ICD, since the social environment of individuals varies so widely between cultures:

> The same symptoms and behaviour that are tolerated in one culture may cause severe social problems in another culture, and it is clearly undesirable for diagnostic decisions to be determined by cultural and social definitions.

Cooper seems to be saying that definitions of normality/abnormality are *culturally relative* (see the earlier discussion of abnormality as deviation from the norm). But he also implies that it's possible to diagnose mental disorders independently of cultural norms, values, and worldviews. This raises the fundamental question as to whether mental disorders exist in some objective sense. Just as modern medicine is based on the assumption that physical illness is the same throughout the world, and that definition, classification, causation, and diagnosis are largely unaffected by cultural factors, so biologically orientated psychiatrists argue that organic psychoses, in particular schizophrenia and depression, are also 'culture-free'.

CRITICAL DISCUSSION 43.3 Is schizophrenia culture-free?

During the 1970s and 1980s, psychiatrists and clinical psychologists became increasingly interested in 'cultural psychiatry'. According to Berry *et al.* (1992), the central issue in the cross-cultural study of mental disorder is whether phenomena such as schizophrenia are:

- *absolute* – found in all cultures in precisely the same form
- *universal* – present in some form in all cultures, but subject to cultural influence
- *culturally relative* – unique to particular cultures and understandable only in terms of those cultures.

Of these three possibilities, only the first corresponds to a 'culture-free' view of abnormality. Berry *et al.* reject this view of abnormality, on the grounds that:

> ... cultural factors appear to affect at least some aspects of mental disorders, even those that are so closely linked to human biology.

Universality is a more likely candidate for capturing the objective (biological) nature of mental disorder. Schizophrenia is the most commonly diagnosed mental disorder in the world, and of the major disorders, the largest number of culture-general symptoms has been reported for schizophrenia (WHO, 1973, 1979; Draguns, 1980, 1990).

However, according to Brislin (1993), there are at least three possible ways in which culture-specific factors can influence schizophrenia: (i) the form that symptoms will take, (ii) the precipitatory factor involved in the onset of the illness, and (iii) the prognosis.

(i) When schizophrenics complain that their minds are being invaded by unseen forces, in North America and Europe these forces keep up to date with technological developments. So, in the 1920s, these were often voices from the radio; in the 1950s, they often came from TV, in the 1960s it was satellites in space, and in the 1970s and 1980s spirits were transmitted through microwave ovens. In cultures where witchcraft is considered common, the voices or spirits would be directed by unseen forces under the control of demons.

(ii) Day *et al.* (1987) studied schizophrenia in nine different locations in the USA, Asia, Europe, and South America. Acute schizophrenic attacks were associated with stressful events 'external' to the patients (such as losing one's job, unexpected death of spouse), which tended to cluster within a two- to three-week period before the onset of obvious symptoms. Some events could only be understood as stressful if the researchers had considerable information about the cultural background of the sample.

(iii) Lin & Kleinman (1988) found that the prognosis for successful treatment of schizophrenia was better in non-industrialised than industrialised societies. The former provide more structured, stable, predictable, and socially supportive environments that allow schizophrenic patients to recover at their own pace and to be reintegrated into society.

A large number of studies have found that, in a wide range of non-western cultures, there are apparently unique ways of 'being mad' (Berry *et al.*, 1992) – that is, there are forms of abnormality that aren't easily accommodated by the categories of ICD or DSM. These *culture-bound syndromes* (CBSs) or 'exotic' disorders are first described in, and then closely or exclusively associated with, a particular population or cultural area, with the local, indigenous name being used. DSM-IV-TR defines them as:

> ... locality-specific patterns of aberrant behaviour and troubling experience that may or may not be linked to a persistent DSM-IV diagnostic category ... (APA, 2000)

For example, *Koro, jinjin bemar, suk yeong, suo-yang* (usually just 'Koro') refers to an acute panic/anxiety reaction to the belief, in a man, that his penis will suddenly withdraw into his abdomen, or in a woman that her breasts, labia or vulva will retract into her body. This is reported in south-east Asia, south China and India. Other examples include *amok, brain fag, dhat,* and *ghost sickness.* These disorders are 'outside' the mainstream of abnormality as defined by, and 'enshrined' within, the classification systems of western psychiatry, which determines the 'standard'. The

underlying assumption is that mental disorders in the West are *culturally neutral,* that they can be defined and diagnosed objectively, while only CBSs show the influence of culture (Fernando, 1991).



Amok – a culture-bound syndrome. But aren't Western mental disorders also influenced by culture?

At the same time, these (and other) cross-cultural studies suggest that the concept of mental disorder isn't merely an expression of western values, but represents a basic human way of perceiving certain behaviour as evidence of abnormal psychological processes. According to Price & Crapo (1999):

> ... mental disorders occur in all cultures ... all cultures appear to label some specific behaviours in a way that is similar to the categories and definitions used by Western psychiatry ...

Problems with the classification of mental disorder

One of the most famous studies criticising basic psychiatric concepts and practices is that of Rosenhan (1973).

KEY STUDY 43.1 On being sane in insane places (Rosenhan, 1973)

- Eight psychiatrically 'normal' people (a psychology student, three psychologists, a paediatrician, a psychiatrist, a painter–decorator, and a housewife) presented themselves at the admissions offices of 12 different psychiatric hospitals in the USA, complaining of hearing voices saying 'empty', 'hollow' and 'thud' (auditory hallucinations).
- These symptoms, together with their names and occupations, were the only falsification of the truth involved at any stage of the study.
- All eight *pseudo-patients* were admitted (in 11 cases with a diagnosis of 'schizophrenia', in the other 'manic depression'), after which they stopped claiming to hear voices. They were eventually discharged with a diagnosis of 'schizophrenia (or manic depression) in remission' (i.e. without signs of illness).
- The only people to have been suspicious of their true identity were some of their 'fellow' patients. It took between 7 and 52 days (average 19) for them to convince the staff that they were well enough to be discharged.
- In a second experiment, members of a teaching hospital were told about the findings of the original study, and were warned that some pseudo-patients would be trying to gain admission during a particular three-month period. Each member of staff was asked to rate every new patient as an impostor or not. During the experimental period, 193 patients were admitted, of whom 41 were confidently alleged to be impostors by at least one member of staff, 23 were suspected by one psychiatrist, and a further 19 were suspected by one psychiatrist and one other staff member. All were genuine patients.

ASK YOURSELF...

- What conclusions can you draw about psychiatric diagnosis from Rosenhan's study?
- Are there any features of the study that would make generalisation difficult?

Rosenhan's study was intended to test the hypothesis that psychiatrists cannot reliably tell the difference between people who are genuinely mentally ill and those who aren't. Since reliability is a necessary prerequisite for validity, the implications of Rosenhan's results for the traditional psychiatric classification of mental disorders are very serious indeed.

Reliability

Diagnosis is the process of identifying a disease and allocating it to a category on the basis of symptoms and signs. Clearly, any system of classification will be of little value unless psychiatrists can agree with one another when trying to reach a diagnosis (*inter-rater/inter-judge reliability*) and represents a fundamental requirement of any classification system (Gelder *et al.*, 1989, 1999).

Early studies consistently showed poor diagnostic reliability. Psychiatrists varied widely in the amount of information they elicited at interview, and in their interpretation of that information, and variations were found between groups of psychiatrists trained in different countries. For example, the US–UK Diagnostic Project (Cooper *et al.*, 1972) showed American and British psychiatrists the same videotaped clinical interviews and asked them to make a diagnosis. New York psychiatrists diagnosed schizophrenia twice as often, while the London psychiatrists diagnosed mania and depression twice as often. (This led some wit to recommend that

American schizophrenics should cross the Atlantic for a cure – presumably, the same advice should be given to British manic–depressives!) However, New York was thought not to be typical of North America.

The 'International Pilot Study of Schizophrenia' (WHO, 1973) compared psychiatrists in nine countries – Columbia, the former Czechoslovakia, Denmark, England, India, Nigeria, Taiwan, USA and the former USSR. It found substantial agreement between seven of them, the exceptions being the USA and USSR, which both seemed to have unusually broad concepts of schizophrenia (thus confirming, after all, Cooper *et al.*'s results).

Improving reliability

- Agreement between psychiatrists can be improved if they're trained to use standardised interview schedules, such as the *Present State Examination* (PSE) (Wing *et al.*, 1974), and Endicott and Spitzer's (1978) Schedule of Affective Disorders and Schizophrenia (SADS). These are intended to:
  - specify sets of symptoms which must be enquired about, and
  - define the symptoms precisely and give instructions on rating their severity.

  As we noted earlier, both DSM and ICD use explicit operational criteria in making a diagnosis, making diagnosis more objective and hence more reliable. These are basically rules for deciding whether a particular patient is to be included within a particular diagnostic category or excluded from it.
- Much more attention is now paid to how symptoms of a given disorder may differ depending on the *culture* in which it appears (see Critical Discussion 43.3). For example, guilt is common in western societies, but rare in Japan or Iran. In the USA, depression among Latinos is more likely to involve *somatic* (bodily) symptoms, such as headaches and 'nerves' than among the white population (Davison *et al.*, 2004). In DSM-IV-TR, cultural differences are dealt with (a) in descriptions of each disorder in the main body of the manual, (b) in an appendix that provides a general framework for evaluating the role of culture and ethnicity, and (c) by describing CBSs in the appendix (see above).
- As far as ICD-10 is concerned, Okasha *et al.* (1993) found higher reliability compared with both ICD-9 and DSM-III-R, and Sartorious *et al.* (1993) concluded that ICD-10's clinical guidelines were suitable for widespread international use and showed good reliability. ICD-10 is expected to remain in use for about 20 years (twice as long as its predecessors) (Costello *et al.*, 1995).

The improved explicitness of DSM criteria has reduced the descriptive inadequacies that were a major source of unreliability in the early editions. The greater overall reliability has been aided by the use of 'decision trees' and computer programs that lead the psychiatrist through each tree (Holmes, 1994). Despite some categories (still) having greater reliability than others, this is now quite acceptable for most of the major categories (Davison *et al.*, 2004). However, problems remain.

- Specifying a particular number of symptoms from a longer list that must be evident before a particular diagnosis can be made seems very arbitrary. For example, DSM-IV-TR insists on depressed mood plus four other symptoms to be present to diagnose major depression (see Table 44.1, page 786). But why four (Davison *et al.*, 2004; Pilgrim, 2000)?
- The reliability of Axes I and II may not always be as high in everyday practice as they are when psychiatrists know they're taking part in a formal reliability study (Davison *et al.*, 2004).
- There's still room for subjective interpretation on the part of the psychiatrist. For instance, the elevated mood must be 'abnormally and persistently elevated' in order to diagnose mania. Likewise, assessment on Axis V requires comparison between the patient and an 'average person'. These examples beg all sorts of questions. As Davison *et al.* (2004) say:

  > ... Such judgements set the stage for the insertion of cultural biases as well as the clinician's own personal ideas of what the average person should be doing at a given stage of life.

- However, Falek & Moser (1975) found that agreement between doctors regarding angina, emphysema and tonsillitis (diagnosed without a definitive laboratory test) was no better (and sometimes actually worse) than that for schizophrenia. Clare (1980) argues that the nature of physical illness is not as clear-cut as the critics of the medical model claim. While agreeing with criticisms of psychiatric diagnosis, Clare believes these should be directed at psychiatrists and not the process of diagnosis in general.

Validity

This is much more difficult to assess than reliability, because for most disorders there's no absolute standard against which diagnosis can be compared. However much we improve reliability, this is no guarantee that the patient has received the 'correct' diagnosis (Holmes, 1994).

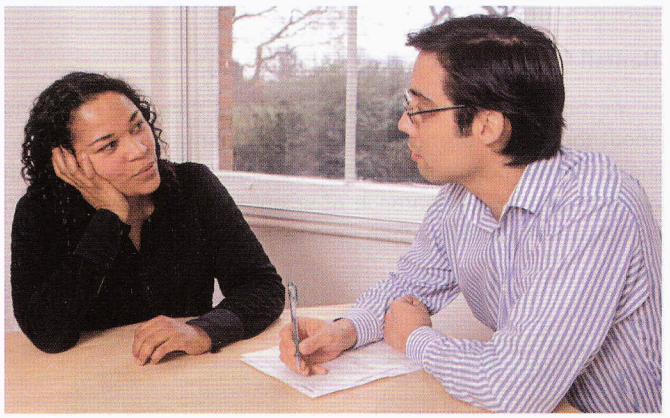
Predictive validity

The primary purpose of making a diagnosis is to enable a suitable programme of treatment to be chosen. Treatment cannot be selected randomly, but is aimed at eliminating the underlying cause of the disorder (where it's known). But in psychiatry there's only a 50 per cent chance of predicting correctly what treatment a patient will receive on the basis of diagnosis (Heather, 1976). Bannister *et al.*

(1964) analysed statistically the relationship between diagnosis and treatment in 1000 cases, and found that there simply was no clear-cut connection. One reason for this seems to be that factors other than diagnosis may be equally important in deciding on a particular treatment.

For example, not only are black people in the UK more likely to be diagnosed as schizophrenic or compulsorily admitted to psychiatric hospital, they're also more likely to be given major tranquillisers or electroconvulsive therapy (ECT) than whites (Fernando, 1988). All ethnic minorities are less likely to be referred for psychotherapy than indigenous whites, and similar differences have been reported between working-class and middle-class groups. Women are also more likely to be diagnosed as psychiatrically ill than men (Winter, 1999: see Chapters 44 and 47). Winter (1999) believes that one viable explanation for these differences is that:

> ... general practitioners and psychiatrists, who are predominantly white, middle class and male, may be biased against, or insufficiently sensitive to the cultural and social situations of, black, working-class or female clients ...



Culture plays a part in all aspects of psychiatric assessment and treatment

Response to treatment is also difficult to predict (see Chapter 45: Winter, 1999).

Construct validity

This is the most relevant form of validity in relation to diagnosis. According to Davison *et al.* (2004), the categories are *constructs* because they're *inferred* – not proven – entities. For example, a diagnosis of schizophrenia doesn't have the same status as a diagnosis of, say, diabetes. With physical disease, there's a real sense in which patients 'have' it, and it's feasible to distinguish them from their disease. But even in the more extreme psychotic states, it's impossible to divorce the condition from the person (Marzillier, 2004).

Construct validity is determined by evaluating the extent to which accurate statements and predictions can be made about a category. For example, to what extent does the construct form part of a network of lawful relationships? These relationships could concern:

- possible causes (such as genetic predisposition or biochemical imbalance: see Chapter 44)
- characteristics of the disorder that aren't symptoms as such, but are associated with the disorder (such as poor social skills in schizophrenia)
- predictions about the course of the disorder and probable response to particular treatments (see above).

Davison *et al.* believe that the DSM diagnostic categories do indeed possess some construct validity – some more than others. However, according to Mackay (1975):

> The notion of illness implies a relatively discrete disease entity with associated signs and symptoms, which has a specific cause, a certain probability of recovery and its own treatments. The various states of unhappiness, anxiety and confusion which we term 'mental illness' fall far short of these criteria in most cases.

Pilgrim (2000) argues that calling madness 'schizophrenia', or misery 'depression' merely *technicalises* ordinary judgements. What do we add by calling someone who communicates unintelligibly 'schizophrenic'? Similarly, Winter (1999) argues that:

> ... diagnostic systems are only aids to understanding, not necessarily descriptions of real disease entities ...

CONCLUSIONS: TO CLASSIFY OR NOT TO CLASSIFY?

ASK YOURSELF...

- Do you think it's scientifically valid – and ethically acceptable – to categorise people in terms of mental disorders?

The case for

- Classifications are needed in psychiatry, as in medicine, to aid communication about the nature of patients' problems, prognosis and treatment. It obviously helps when exchanging information about individual cases if there's some agreed terminology available and if a label can be assigned that distinguishes one patient's disorder from another's (Claridge & Davis, 2003; Gelder *et al.*, 1989).
- Assuming that various types of abnormal behaviour do differ from one another, classifying them is essential, for these differences may provide vital clues to their causes and treatments (Claridge & Davis, 2003; Davison *et al.*, 2004). Classification allows research to be conducted with comparable groups of patients (Gelder *et al.*, 1989).

The case against

- The very fact that there are different classification schemes (DSM and ICD are the most commonly used

and cited, but aren't the only ones) demonstrates that there's a certain degree of arbitrariness about how people are diagnosed. DSM-IV-TR and ICD-10 merely represent the *current* (or most recent) beliefs of experts in the field about how psychological disorders should be classified.

> ... the fact that they [DSM and ICD] are not identical indicates that the diagnostic categories they suggest are somewhat arbitrary and often represent compromise. This is bound to be the case, since the contents of both merely result from decisions made in committee by groups of professionals, experienced in their own fields, but often of differing theoretical persuasion or clinical expertise ... (Claridge & Davis, 2003)

These limitations relate to the *validity* of classification (see above).

- Similarly, the fact that DSM has undergone several revisions confirms the *constructive* nature of attempts to classify psychological disorders. As Critical Discussion 43.1 shows, psychiatrists can, and do, change their views regarding what should count as a disorder in response to wider social and cultural changes. Critical Discussion 43.2 shows, in addition, that psychiatry reflects fundamental social *values*. In both these ways, classification can never be completely objective or based on science alone. DSM-V is (tentatively) scheduled for 2010 (Bentall, 2003), illustrating the continual 'tweaking' of definitions of psychological disorders. How objective is that?
- Classifying someone as depressed or anxious produces a loss of information about the person, thereby reducing some of his/her uniqueness. Even being a 'former mental patient' may have stigmatising effects on the individual: friends and relatives might treat them differently and work may be hard to find (Davison *et al.*, 2004).
- A central problem for DSM in particular, and classification of disorders in general, is the tendency for an individual to meet the diagnostic criteria for *more than one disorder* (*comorbidity*). This is well documented in medicine, but in these cases the two illnesses/conditions have quite separate aetiology and they *look* very different. But in psychiatry, comorbid disorders often seem surprisingly similar, as though they share a common cause and underlying mechanism (Claridge & Davis, 2003).
- Another major problem is the *overlap* between the symptoms of 'different' disorders. In DSM-IV-TR, several Axis I disorders are descriptively similar to, and have their apparent counterpart in, an Axis II disorder (for example, *obsessive compulsive disorder* (OCD) and *OCD personality disorder*). To consider these as belonging to two totally different categories of abnormality looks very artificial (Claridge & Davis, 2003).

Categories vs dimensions

As we've seen, the classification of mental disorders is *categorical*. Abnormality is assumed to differ qualitatively from normality, so that a person either belongs in a particular category or doesn't. But some researchers have argued that the most appropriate system for diagnosing and assessing mental disorders is *dimensional;* abnormality and normality are only *quantitatively* different (involving a *continuum* of severity: Lilienfeld, 1998).

These two approaches mirror the important difference between psychiatry and psychology. According to Pilgrim (2000), diagnosis is a medical task that creates a simple dichotomy between the sick and the well: 'Is this person suffering from a mental disorder or not?' (and by extension, if 'yes', 'which one?'). By contrast, psychologists assume a *continuity* between normal and abnormal: 'How do we account for this person's actions and experience in this particular context?' According to Marzillier (2004):

> ...The experiences that lead people to be diagnosed as 'mentally ill' are experiences that all of us can have in some form or at some stage ...

Bentall (2003) argues that:

> ... we have been labouring under serious misunderstandings about the nature of madness for more than a century, and ... many contemporary approaches to the problem, although cloaked with the appearance of scientific rigour, have more in common with astrology than rational science ...

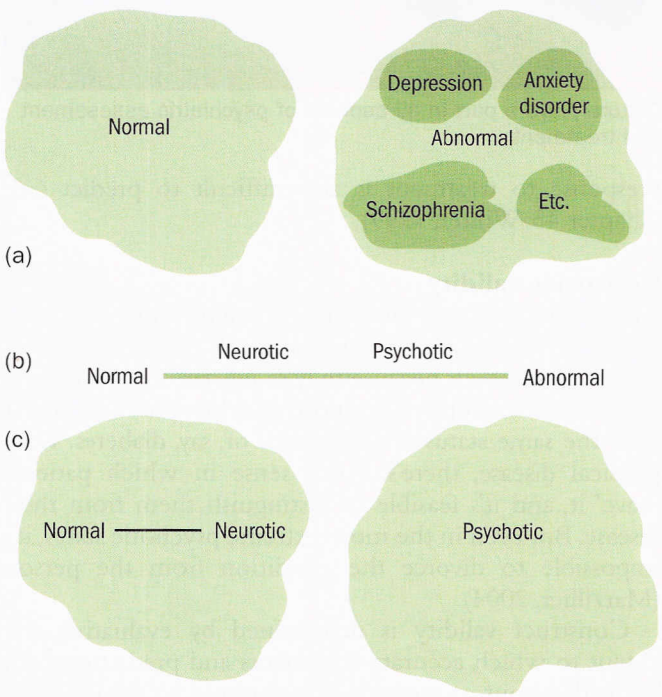


Figure 43.3 Representations of (a) the categorical and (b) the dimensional views of abnormality. (c) combines (a) & (b)

Two of these serious misunderstandings or false assumptions are, first, that madness can be divided into a small number of diseases and, second, that the manifestation or 'symptoms' of madness cannot be understood in terms of the psychology of the person who suffers from them.

Gelder *et al.* (1989) believe that:

> The use of classification can certainly be combined with consideration of a patient's unique qualities, indeed it is important to combine the two because these qualities can modify prognosis and need to be taken into account in treatment ...

In other words, the categorical and dimensional approaches aren't necessarily incompatible. Figure 43.3c suggests how they might be combined.

According to Davison *et al.* (2004), early indications are that DSM-V will become *more dimensional* than categorical.

CHAPTER SUMMARY

- Abnormality as **deviation from the average** (the **statistical criterion**) defines abnormality as not behaving in the way that most people do. But this fails to distinguish between atypical behaviour that's desirable and undesirable.
- **Deviation from the norm** defines abnormality as not behaving or feeling as one is **expected** to. But it's not obvious what norms are being broken in the case of mental disorder.
- The **deviation from ideal mental health** criterion identifies several definitions of mental health. But these involve **value judgements** about ideal states that are culturally defined (unlike physical health).
- Abnormality as **personal distress/suffering** defines abnormality in terms of subjective experiences. **Other people's distress** may act as a counterbalance to the lack of insight shown by some people with a mental disorder.
- Abnormality as **maladaptiveness** focuses on the **consequences** of abnormal behaviour for the individual, especially being prevented from achieving one's goals.
- Abnormality as **unexpected behaviour** means overreacting to something, but underreacting could be considered just as abnormal. Behaviour that's highly **consistent/predictable** or **highly inconsistent/unpredictable** may be considered abnormal.
- The way we talk about psychological disorder reflects the **medical model**. Critics argue that the norms from which the mentally ill are thought to deviate are expressed in moral, psychological and legal terms, not medical ones, yet the solution takes the form of medical treatment.
- According to Scheff, schizophrenics are breaking **residual rules**, which tend to reflect middle-class values regarding 'decency' and 'reality'.
- According to Szasz, individuals diagnosed as mentally ill either have **neurophysiological** disorders (corresponding to **organic psychosis**) or, more often, **problems in living** (corresponding to **functional psychosis**). This makes the concept of *mental* illness meaningless.
- An integral part of the medical model is the **classification** of mental disorder and the related process of **diagnosis**. All systems of classification stem from Kraepelin's identification of *dementia praecox* (schizophrenia) and manic–depressive psychosis.
- **DSM-IV-TR** uses a larger number of discrete categories to classify mental disorders that appear under a smaller number of wider categories in **ICD-10**.
- DSM uses a **multi-axial system** of classification, representing different areas of functioning: **clinical syndromes** (Axis I); **personality disorders/mental retardation** (Axis II); **general medical conditions** (Axis III); **psychosocial and environmental problems** (Axis IV); and **global assessment of functioning** (Axis V).
- ICD doesn't have separate axes in the way that DSM does, but broad types of **aetiology** are built into the categories of mental disorder. DSM makes no assumptions about aetiology and is **atheoretical**.
- Both DSM and ICD have dropped the traditional distinction between **neurosis** and **psychosis**. Psychosis is a much more serious form of mental disorder, due to loss of contact with reality, and is **qualitatively different** from 'normal' behaviour.
- The **cross-cultural** study of schizophrenia tries to determine whether it's **absolute** ('culture-free'), **universal** or **culturally relative**. Culture can influence the form of symptoms, precipitating events for the onset of symptoms, and prognosis.
- **Culture-bound syndromes** (CBSs) are seen as falling outside mainstream classifications of disorder, implying that western mental disorders are objective and uninfluenced by cultural factors. However, all cultures seem to have the concept of mental disorder.
- **Inter-rater/judge reliability** has been improved in more recent versions of both DSM and ICD by the use of **standardised interview schedules** and **explicit diagnostic criteria**. But there's still room for subjective interpretation.
- **Validity** is more difficult to assess in the absence of absolute standards. For a diagnosis to be considered valid, it should allow prediction of treatment and recovery, as well as implying the cause(s) of the disorder.
- Psychotherapists using an **idiographic approach** criticise the use of psychiatric classification (which adopts a **nomothetic**, **categorical** approach), and psychologists prefer a **dimensional approach**. But these two approaches aren't mutually exclusive.

Links with other topics/chapters

- The concepts of *health, illness* and *disease* are central to *health psychology* (Chapter 12).
- In the context of definitions of abnormality, *helping* the 'patient' could be motivated either by an *altruistic* desire to end his/her distress, or by an *egoistic* desire to end the helper's own distress. This distinction applies to *bystander intervention* and other forms of *prosocial behaviour* (Chapter 30).
- The attribution of blame and responsibility (denied to the mentally ill) (Chapter 23) is relevant to understanding why certain types of *victim* are more or less likely to be *helped* (Chapter 30).
- Szasz's argument, that only the brain can literally be diseased, and not the mind, breaks down if we *identify the mind with the brain* (Chapter 49).
- Axis IV of DSM-IV-TR relates to *life changes* as measured by Holmes and Rahe's (1967) *Social Readjustment Rating Scale* (SRRS) (Chapter 12).
- The idea that schizophrenia might be found in all cultures in precisely the same form ('culture-free') corresponds to the belief that it's possible to construct *culture-free tests of intelligence* (Chapter 41).
- While *cross-cultural psychology* looks for *universal* aspects of human behaviour, *cultural psychology* focuses on how behaviour *differs* between cultures (*cultural relativism*) (Chapter 47).
- Regular revisions of DSM and other classification systems have a parallel in the *scientific revolutions* (involving *paradigm shifts*) described by Kuhn. Both illustrate the *social nature of scientific activity* (Chapter 3).
- Eysenck is largely responsible for introducing the dimensional approach to abnormality through his *theory of personality* (Chapter 42).
- The categorical system adopts a *nomothetic* approach: it emphasises the similarities between people (what all schizophrenics, for example, have in common). Its critics consider that an *idiographic* approach is more appropriate (Chapter 42).

Anxiety disorders
- Phobic disorders
  - *Agoraphobia*
  - *Social phobia*
  - *Specific phobias*
  - *Explaining phobias*
- Obsessive–compulsive disorder (OCD)
  - *Some issues regarding classification and diagnosis*
  - *Explaining OCD*
- Post-traumatic stress disorder (PTSD)
  - *Explaining PTSD*

Mood (affective) disorders
- Manic disorder (mania)
- Unipolar (depressive) disorder (UDD)
  - *Are there different kinds of depression?*
  - *Endogenous vs exogenous depression*
  - *Gender differences*
  - *Explanations of depression*
  - *An evaluation of the attributional theory*

Schizophrenia
  - *So who's right – Schneider or Slater and Roth?*
  - *Positive and negative symptoms*
- Varieties of schizophrenia
  - *Simple schizophrenia*
  - *Undifferentiated (atypical)*
- Theories of schizophrenia
  - *Is schizophrenia a brain disease?*
  - *The biochemical theory of schizophrenia*
  - *The genetic theory of schizophrenia*
  - *Conclusions: the nature and nurture of schizophrenia*
  - *Laing and existential psychiatry*

Eating disorders
- Anorexia nervosa
- Bulimia nervosa
- Explaining eating disorders
  - *Are EDs universal? Are the causes universal?*
  - *Subcultural differences*
  - *Vulnerability: the role of individual differences*

Chapter summary

Links with other topics/chapters

44

PSYCHOPATHOLOGY



INTRODUCTION AND OVERVIEW

As we saw in Chapter 43, the classification of mental disorders is an integral part of the *medical model*. ICD-10 (1992) and DSM-IV-TR (2000) identify several general categories of mental disorder, within each of which are found a number of specific disorders. This chapter samples some of the disorders which, both historically and currently, have attracted most research interest – and often the most debate and controversy, both within and outside psychiatry.

Anxiety disorders are a category in DSM subsumed by the ICD category *neurotic, stress-related and somatoform disorders.* These include *phobic disorders* (*phobic anxiety disorders* in ICD), *obsessive–compulsive disorder* (OCD), and *post-traumatic stress disorder* (PTSD).

Eating disorders are a DSM category subsumed by ICD's *behavioural syndromes associated with physiological disturbances and physical factors.* Two major eating disorders are *anorexia nervosa* and *bulimia nervosa.*

Of all the disorders identified in ICD and DSM, *schizophrenia* is the most serious. Kraepelin (1913) called the disorder *dementia praecox* (senility of youth), believing that it occurred early in adult life and was characterised by a progressive deterioration or dementia. However, Bleuler (1911) observed that it also began in later life, and wasn't always characterised by dementia. Bleuler coined the word 'schizophrenia' to refer to a splitting of the mind's various functions, in which the personality loses its unity.

Mood (or *affective*) *disorders* involve a prolonged and fundamental disturbance of mood and emotions. At one extreme is *manic disorder* (or *mania*), and at the other is *depressive disorder.* Mania usually occurs in conjunction with depression (*bipolar disorder*). The term *unipolar* is reserved for the occurrence of depression on its own. (The term *manic–depressive* refers to *both* the unipolar and bipolar forms of affective disorder.)

ANXIETY DISORDERS

Of all forms of psychological distress, emotional disturbances are perhaps the most common (Lilienfeld, 1998), and 'fear is a core emotion in psychopathology' (LeDoux, 1998). While anxiety (a brooding fear of what might happen) was a central feature of Freud's psychoanalytic theory (LeDoux, 1998), many psychologists have argued that fear is a fundamentally *adaptive reaction* to stressors (specifically, threat). It's generally considered abnormal only when it's disproportionate to objective circumstances. Fear probably evolved as an alarm signal to warn organisms of potential danger. But some people tend to feel afraid even when there's no (objective) threat present: these 'false alarms' are what we call anxiety disorders.

For example, people with *panic disorder* experience sudden surges of extreme terror, even in perfectly safe environments. As Lilienfeld (1998) says:

> ... it is this mismatch between the severity of individuals' emotional reactions and of objective stressors that makes panic disorder psychopathological ...

ASK YOURSELF...

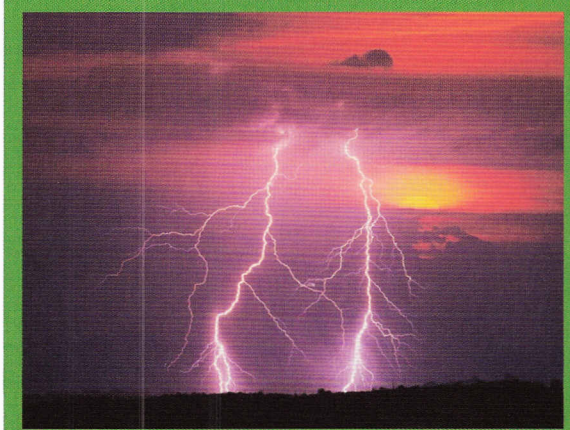
- While this might seem like a perfectly reasonable way of distinguishing normal from abnormal anxiety, can you see any flaws in the argument?
- How does it relate to the categorical/dimensional approaches discussed in Chapter 43? (See pages 772-773.)

Phobic disorders

A *phobia* is an extreme, *irrational* fear of some specific object or situation. Typically, the patient acknowledges that the object of fear is harmless, but the fear is experienced nonetheless (this is the irrational element). Trying to avoid the feared object or situation at all costs can interfere with the person's normal functioning, and distinguishes a phobia from a milder fear or mere dislike of something. Attempts to hide the phobia from others may induce further anxiety, guilt, and shame.

Box 44.1 The variety of phobias

Acrophobia: high places
Algophobia: pain
Anthropophobia: men
Aquaphobia: water
Arachnophobia: spiders
Astraphobia: storms, thunder, lightning
Belonophobia: needles
Claustrophobia: enclosed spaces
Cynophobia: dogs
Hematophobia: blood
Neophobia: anything new
Nycotophobia: the dark
Octophobia: the figure eight
Ophidiophobia: snakes
Opthalmophobia: being stared at
Paraphobia: sexual perversion
Pathophobia: disease
Phobophobia: phobias
Phonophobia: noises/voices
Pyrophobia: fire
Sclerophobia: bad men/burglars
Sociophobia: society/people in general
Technophobia: digital/computer technology
Thanatophobia: death
Xenophobia: strangers



Astraphobia

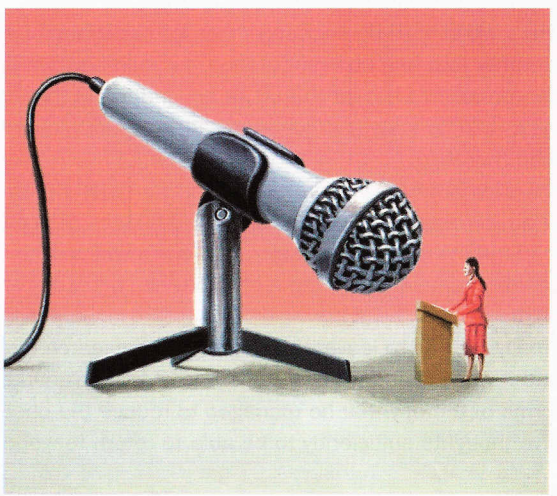
As Box 44.1 shows, almost anything may become the object of a phobia, but some phobias are much more common than others. DSM-IV-TR identifies three categories of phobia: *agoraphobia* (without history of panic disorder), *social phobia,* and *specific phobias.*

Agoraphobia

This is the most common of all phobias (accounting for about 60 per cent of all phobic patients), and occurs predominantly in women (while most other phobias tend to be fairly evenly divided between the sexes). While agoraphobia is commonly defined as fear of open spaces, the *primary* fear is leaving the safety and security of home and/or companions. Fear of being in public places is *secondary* but, significantly, this is what the patient is usually aware of. It often centres on a fear of finding oneself in a situation from which escape is difficult, or where help is unavailable in the event of a panic attack (which often accompanies agoraphobia). Indeed, nearly all researchers agree that all cases of agoraphobia stem from fear of panic attacks (Lilienfeld, 1998). Mitchel (1982) sees agoraphobia as a form of separation anxiety (see Chapter 32).

Social phobia

This was identified in the UK in 1970, but not included in DSM until 1980 (Menninger, 1995). It's an intense and excessive fear of being observed by other people, such as when eating or drinking in public, talking to members of the opposite sex, or having to speak or write in front of others. These are all examples of *performance* social phobia. *Limited interactional* social phobia involves feeling anxious only in specific situations (such as when interacting with an authority figure), while *generalised* social phobia arises in most social situations.



Having to make a speech in front of any kind of audience is likely to induce some degree of anxiety in most people. As a social phobia, anxiety over public speaking is an intense and excessive fear of being exposed to scrutiny by other people; it's an example of performance social phobia

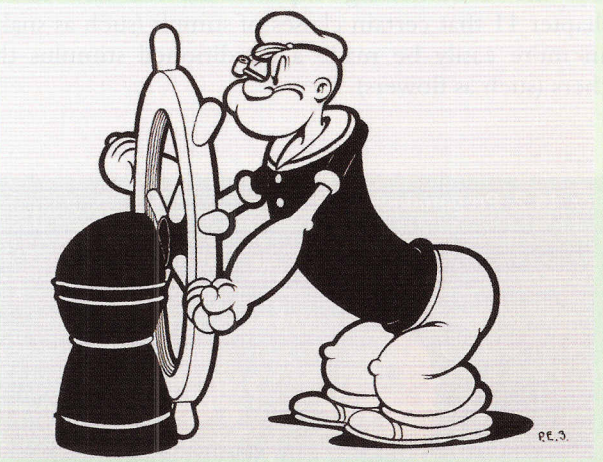
The underlying fear is of acting in a way that's embarrassing or humiliating for the self or others. Like agoraphobia, most social phobics are women, and the problem typically begins in adolescence.

Specific phobias

Most phobias fall into this category (see Box 44.1), and definitions of phobias usually relate to specific phobias. Generally, these are less disruptive than agoraphobia or social phobias. They can develop at any time of life, although some are quite common in childhood (such as cynophobia and nycotophobia), while 'illness and injury' phobias (and thanatophobia) tend to occur in middle age.

CASE STUDY 44.1 Popeye phobia

A three-year-old girl suddenly developed recurrent bronchitis, which got worse when she attended nursery school. The trouble was traced to the slippers of a boy in the same class. Every time the girl saw them she began to retch and cough, and became upset. The slippers sported a picture of Popeye, the cartoon sailor man. Even the mention of his name induced coughing. The girl had seen a Popeye cartoon at her friend's house and became frightened of it. Following behaviour therapy (see Chapter 45), the girl recovered.



(Based on Murray, 1997)

Explaining phobias

ASK YOURSELF...

- How would Freud account for phobias (see Chapter 43)?
- How would learning theory explain them (see Chapter 11)?

According to Freud, phobias are the *surface* expression of a much deeper conflict between the id, ego and superego,

originating in childhood (as in Little Hans' fear of horses: see Chapter 35, page 605). Phobias are (conscious) expressions of (unconscious) unacceptable wishes, fears, and fantasies that have been *displaced* from their original, internal source onto some external object or situation that can be easily avoided.

Behaviourist critics of Freud's explanation pointed out that Hans's phobic response only occurred in the presence of a large horse pulling a heavily loaded cart at high speed, and that the phobia developed *after* Hans had witnessed a terrible accident involving a horse pulling a cart at high speed. As we saw in Chapter 11, phobias can be classically conditioned, and Wolpe (1969) argued that this is how *all* phobias arise. Some phobics (but not all) trace their phobias to some traumatic experience (often in childhood).

According to Mowrer's (1947) *two-process/two-factor theory,* phobias are *acquired* through classical conditioning (factor 1) and *maintained* through operant conditioning (factor 2): *avoidance* of the phobic stimulus and the associated reduction in anxiety is *negatively reinforcing.* By contrast, Rachman's (1984) *safety signal hypothesis* sees avoidance as being motivated by *positive* feelings of safety. However, the fact that some phobics cannot recall any traumatic experiences, and that extreme trauma doesn't inevitably lead to a phobia developing, is inconsistent with the conditioning explanation. We also saw in Chapter 11 that certain classes of stimuli (such as snakes) can more easily be made a conditioned stimulus than others (such as flowers).

Box 44.2 Preparedness



- Rosenhan & Seligman (1984) propose an *interaction* between biological and conditioning factors that predisposes us to acquire phobias of certain classes of stimuli.
- According to the concept of *preparedness/prepared conditioning*, we're genetically prepared to fear things that were sources of danger in our evolutionary past (see Gross *et al.*, 2000).
- Hugdahl & Ohman (1977) have shown that in laboratory experiments, people without pre-existing phobias can be conditioned more easily to snakes than flowers.
- However, snakes have a negative 'reputation' or social status, while flowers are generally viewed positively and are completely non-threatening. So, although preparedness as an explanation for direct conditioning may not be valid, preparedness for *observational and instructional learning* is possible (Murray & Foote, 1979; Rachman, 1977).

Obsessive-compulsive disorder (OCD)

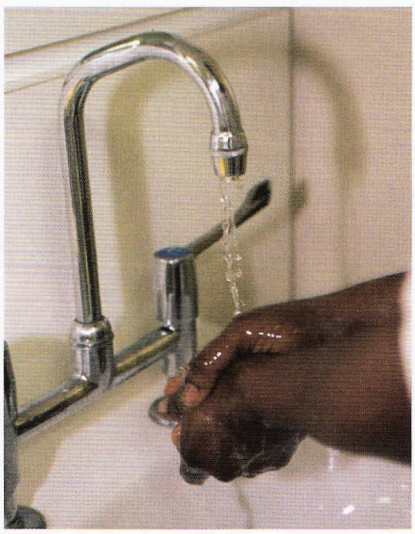
Obsessions are recurrent, unwanted, intrusive thoughts or images that don't feel voluntarily controlled, and which are experienced as morally repugnant or intensely distressing. They mostly have sexual, blasphemous, or aggressive themes (see Case Study 44.2). For example, it's not uncommon for deeply religious people to have repeated blasphemous thoughts, such as 'God doesn't exist', or for caring parents to have thoughts of harming their children. These obsessions are resisted by being ignored or suppressed, or by 'neutralising' them with some other thought or action (Shafran, 1999); these may include compulsions.

CASE STUDY 44.2 Obsession without the compulsion (Sutherland, 1976)

- An example of an obsession occurring without compulsive behaviour is sexual jealousy, an extreme case of which is described by Stuart Sutherland in *Breakdown* (1976).
- Sutherland was a well-known British experimental psychologist who'd been happily married for several years when his wife suddenly revealed she'd been having an affair (but had no wish to end their marriage). At first, he was able to accept the situation, and found that the increased honesty and communication actually improved their marriage.
- However, after asking his wife for further details of the affair, he became obsessed with vivid images of his wife in moments of sexual passion with her lover, and he couldn't remove these thoughts from his mind, day or night.
- Finally, he had to leave his teaching and research duties, and it was only after several months of trying various forms of therapy that he managed to reduce the obsessive thoughts sufficiently to be able to return to work.

Compulsions are actions which the victim feels compelled to repeat over and over again, according to rituals or rules. Obsessions and compulsions are often related, the latter representing an attempt to counteract the former. For

example, compulsive handwashing may be an attempt to remove the obsessive preoccupation with contamination by dirt or germs, either as agent or victim. While the person recognises that the compulsive act is unreasonable and excessive, it's also seen as purposeful. The function of compulsive acts is to prevent a dreaded event and reduce distress. Many patients find the need to perform the compulsion distressing in itself, and are frustrated by the time it takes to complete it 'correctly' and how it interferes with normal social and work functioning.



Compulsive hand-washing is often an attempt to remove an obsessive preoccupation with contamination

Shafran (1999) gives the example of a man who was obsessed with the thought that he'd contracted AIDS from sitting next to someone who looked unkempt. In response to this, he repeatedly checked his body for signs of illness and washed his hands whenever he had an intrusive image of this person. When outside, he'd continually check around him to see if there were any discarded tissues that might carry the HIV virus. This became so laborious that he stayed indoors for much of the time. Any interruption to the checking and washing resulted in the entire routine starting again.

Until quite recently, OCD was regarded as a rare disorder (affecting less than 0.5 per cent of the population). Now, however, it's the fourth most common disorder, and lifetime prevalence is at least 3 per cent in females and 2 per cent in males. In the UK, an estimated one to one-and-a-half million people suffer from OCD. According to Claridge & Davis (2003), it's still often under-diagnosed and under-treated in most populations. Between a third and a half of patients experienced their first symptoms during childhood, but it mostly goes unnoticed then. It usually begins in early adulthood, but begins earlier in males. Women have more contamination and aggressive obsessions, and tend to display more cleaning rituals. Men's obsessions are more likely to concern symmetry and order, exactness and sex, and they're most likely to be hoarders (see below).

Some issues regarding classification and diagnosis

- Some writers have questioned whether OCD should be classified as an anxiety disorder at all. Indeed, in ICD-10 it's listed separately from anxiety disorders. Others have suggested that anxiety is a *product* of the distressing and disabling symptoms (*not* a cause).
- Like other disorders, OCD's clinical features are *heterogeneous:* individuals with OCD may differ considerably from one another. Any one individual may have one (but typically several) of a variety of symptoms, in varying degrees and combinations. Earlier attempts to deal with this variability led to the identification of 'washers' and 'checkers'. It was thought that all patients fell into one or other category, but now there are at least four or five recognised primary dimensions: *symmetry and ordering, hoarding, contamination and cleaning, aggressive obsessions and checking,* and *sexual and religious obsessions* (Claridge & Davis, 2003).
- OCD has always been firmly embedded within the 'neurotic' disorders (see Chapter 43). This is because of the assumption that patients recognise the excessive and unreasonable nature of their obsessions and compulsions (they have *insight*). But OCD patients display varying degrees of insight, and in about 10 per cent of cases they seem to lack it altogether. Their thinking begins to resemble *delusions* (which are more 'psychotic'), and they may be diagnosed as 'schizophrenic', 'psychotic–schizo-affective subtype' or 'delusional disorder or psychotic disorder not otherwise specified' (Claridge & Davis, 2003). A key factor that distinguishes OCD patients with delusions from psychotics is the clear and logical link between the OCD patient's delusional thoughts and the compulsions they induce (O'Dwyer & Marks, 2000).

Box 44.3 Body dysmorphic disorder (BDD)

- Morselli (1886) introduced the term *dysmorphophobia* (from the Greek *dysmorphia,* meaning 'ugliness of the face'), defining it as the subjective feeling of ugliness and of a physical defect, despite a normal appearance, and an associated feeling of shame.
- It was first called *body dysmorphic disorder* in DSM-III-R (1987), and appears in both DSM-IV-TR and ICD-10, where it's classified as a hypochondriacal disorder. But according to Sobanski & Schmidt (2000), some recent researchers have classified it as an 'obsessive-compulsive spectrum' disorder. The characteristic feature is an intense preoccupation with an imagined or real, but minor, defect of physical appearance. This concern becomes so overwhelming that it causes clinically significant distress and impairment in social, occupational and other important areas of functioning.

- Any part of the body can be involved, but most commonly anxiety centres on the face and hair abnormalities – like thinning hair or fear of going bald. Unlike patients with eating disorders (see text below, pages 800–805), BDD patients don't have a disturbed body image as a whole. Their preoccupations are often experienced as repetitive, intrusive thoughts associated with anxiety and distress (as in OCD).
- Most BDD patients perform ritualised behaviours resembling OCD compulsions, such as mirror-checking, grooming behaviours and compulsive skin-picking.
- BDD is treated using psychoactive drugs and psychological therapies. But some patients elect to have cosmetic surgery. Typically, the initial feelings of happiness are replaced by a shifting of their symptoms to another body part, some patients undergoing up to nine operations (Simeon *et al.*, 1995; Veale *et al.*, 1996).
- For example, Helen, a woman of uncommon beauty, became convinced as a teenager that her nose was repugnantly small. After three separate cosmetic surgical procedures, she still viewed her nose as misshapen. Two years of psychotherapy failed to help her, and she eventually responded to clomipramine (Anafranil: see Chapter 45) (Bower, 1995).

Explaining OCD

Behavioural explanations

ASK YOURSELF...

- How might you explain OCD in terms of conditioning principles? (See Chapter 11.)

A *behavioural* explanation would see OCD as a way of reducing anxiety. If an obsession induces anxiety, then any compulsive behaviour that alleviates the anxiety should be more likely to occur (through *negative reinforcement:* e.g. Rachman & Hodgson, 1980). Since the compulsion provides only *temporary* relief from anxiety, when it starts to increase again the person is motivated to repeat the compulsive act. Paradoxically, compulsions (as well as avoidance and trying to suppress the obsession) serve to *increase* the frequency of the obsession. As Shafran (1999) says:

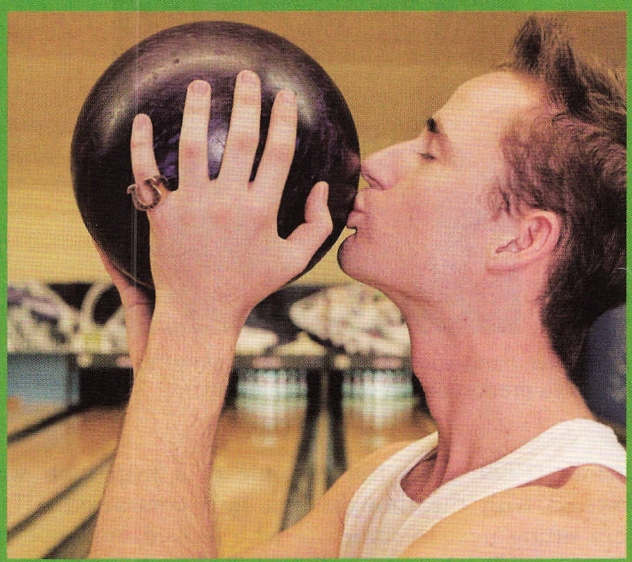
> These obsessions subsequently increase the compulsive behaviour, leaving the person trapped in the vicious obsession–compulsion cycle ...

An evaluation of behavioural explanations

◎ The account given above can only account for OCD's *maintenance* – not how it developed in the first place. The *superstition hypothesis* might be more relevant here.

Box 44.4 The superstition hypothesis

- Skinner (1948a) argued that what we call 'superstition' develops as a result of a chance association between some behaviour and a reinforcer.
- In Skinner's experiments, pigeons were given food at regular intervals regardless of their behaviour. After a while, they displayed idiosyncratic movements, presumably because these were the movements they happened to be making when the food was given.
- This chance reinforcement of behaviour can account for many compulsive rituals (O'Leary & Wilson, 1975). For example, the rituals of soccer players may include being last on to the pitch, or wearing only a particular pair of boots. Such behaviours may occur because in the past they were associated with success. If such rituals aren't enacted, anxiety is aroused.



The 'lucky kiss', a common form of superstitious behaviour among sportsmen and women

- However, while such chance associations might explain how particular *behaviours* arise, the development of *intrusive thoughts* are much more difficult to explain by the behavioural model.

◎ Rachman and Hodgson's account explicitly proposed that it's normal for people to have intrusive thoughts. For example, it's been shown that 90 per cent of non-patients have unwanted, intrusive thoughts with the same content as those of people diagnosed with OCD (including the impulse to disrupt a peaceful gathering and to jump in front of an approaching train). However, non-patients can dismiss their obsessions more easily, they experience them less often, and they're less distressed by them (Shafran, 1999). This is related to *interpretation* and *psychological vulnerability* (Salkovskis, 1985: see below).

Cognitive–behavioural explanations

According to *cognitive–behavioural theory* (e.g. Beck, 1976), 'normal' obsessions become abnormal when people interpret the occurrence and content of unwanted intrusive thoughts as indicating that they may be/have been/come to be *responsible* for harm or its prevention (Salkovskis, 1985; Salkovskis *et al.*, 1998). Lopatka & Rachman (1995) showed that in a high-responsibility condition, people with checking compulsions had stronger urges to check, experienced greater discomfort, and made higher estimates of the probability of harm, than those in a low-responsibility condition.

Another interpretation with specific implications for treatment (and which is closely linked to perceived responsibility for harm) is 'thought–action fusion' (TAF) (Rachman, 1993). This involves appraising intrusive thoughts as equivalent to actions. For example, one woman believed that if she had an image of her daughter lying dead, then it was as though she were 'tempting fate' and increasing the chances that her daughter would die. TAF involves two components:

1. *likelihood TAF:* the belief that thinking about an unacceptable or disturbing event makes it more likely actually to happen
2. *moral TAF:* interpreting the obsessive thoughts and forbidden actions as morally equivalent. The person feels that his/her unacceptable thoughts, images and impulses are (almost) as bad as the event (e.g. 'Only a wicked mother would have thoughts about harming her child').

TAF represents a form of *psychological vulnerability,* which increases the likelihood of *misinterpretation* taking place.

An evaluation of cognitive–behavioural explanations

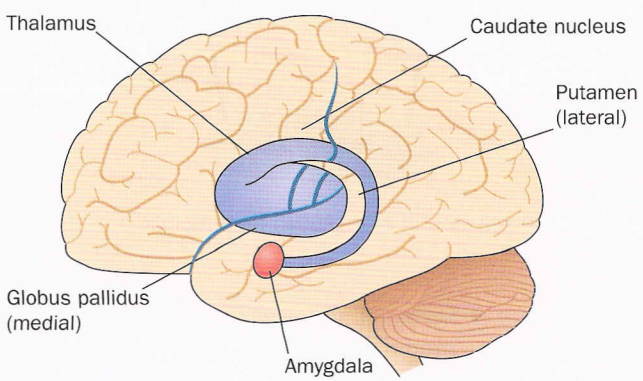
- According to Nieboer (1999), what Rachman calls TAF can be attributed to Freud (1909): patients with OCD had difficulties distinguishing thoughts from actions. If Freud was correct in believing that obsessions are defensive psychological responses, then attempts to prevent compulsive behaviour would, at best, produce *symptom substitution* (see Chapter 45), and at worst, cause psychotic breakdown. Rachman's TAF has implications for the origin, maintenance, and treatment of OCD, which are completely different from those drawn by Freud (Shafran & Salkovskis, 1999).
- This currently popular theory sees OCD as an extension or exaggeration of normal behaviour. One of its great strengths is that it can explain OCD symptoms in terms of everyday, 'normal' cognition and behaviour, as noted below.
  (a) Unwanted or intrusive thoughts may be the precursor to, or raw material of, obsessions. But, more importantly, they're part of everyday cognitive experience. Normal intrusive thoughts in healthy individuals are ideas, impulses and images that interrupt our *stream of consciousness.* Their *content* is indistinguishable from the obsessional thoughts of people with OCD – but they're less intense, less long-lasting and less distressing.
  (b) Similarly, repetitive behaviours are especially common in childhood. This reflects the young child's strong need for predictability and order. Most normal childhood rituals (often fear-related and observable at night time) have disappeared by puberty. But the *extent* of (developmentally normal) childhood compulsions is highly correlated with anxiety.
- What turn normal intrusive thoughts into obsessions are *misinterpretation* and *vulnerability.* Misinterpretation may involve seeing some commonplace object or situation as a potential catastrophe, taking an intrusive thought to be much more personally relevant or threatening than it 'really' is. As we saw above, vulnerability is related to TAF.

ASK YOURSELF...

- How does this evaluation of cognitive behavioural explanations relate to the debate about the categorical vs dimensional approaches to defining abnormality? (See Chapter 43, pages 772–773.)

Biological explanations

(a) Brain neuropathology: Encephalitis, head injuries and brain tumours are all associated with the development of OCD (Jenike, 1986). Several models of OCD all predict, in one way or another, the involvement of the *prefrontal cortex* (PFC), the *basal ganglia* and the *limbic system.* The basal ganglia comprise the caudate, putamen, globus pallidus and the amygdala, and are linked to the control of motor behaviour. The focus on the basal ganglia is due to their relevance to compulsions, as well as the relationship between OCD and Tourette's syndrome. The vocal and motor tics characteristic of Tourette's are linked to basal ganglia dysfunction, and Tourette's patients also often have OCD (Sheppard *et al.*, 1999).



The basal ganglia

The PFC has direct links with the basal ganglia via its connections with the limbic system. It also receives signals *from* these sub-cortical structures. So, there are connections between the PFC and the sub-cortical areas that pass through the limbic system.

According to Saxena *et al.* (1998), the function of all the *direct* pathways between the PFC and basal ganglia is to execute 'pre-packaged', complex responses to 'socioterritorial' stimuli. These refer to things that are highly significant to the organism's survival (such as hygiene, sex, safety, keeping things in order). They need to be performed quickly in order to be adaptive, and must operate to the exclusion of other interfering stimuli. The activation of these direct pathways tends to pin or rivet the execution of the behaviour until the attentional need to do so has passed.

Part of the function of the *indirect* pathways is to inhibit or suppress the direct pathways when it's appropriate to switch to another behaviour. This is something that OCD patients have trouble doing.

Normally, socioterritorial concerns pass through the direct pathway and are inhibited by the indirect pathway relatively quickly. But in OCD patients, excess activation of the direct pathway causes fixation with these concerns. The indirect pathway is too weak to 'turn off' the signal from the direct pathway, and the socioterritorial concerns are experienced by the individual as repetitive, intrusive obsessions.

So, Saxena *et al.*'s model proposes a substantial *imbalance* between the direct and indirect pathways. This causes a response bias towards socioterritorial stimuli.

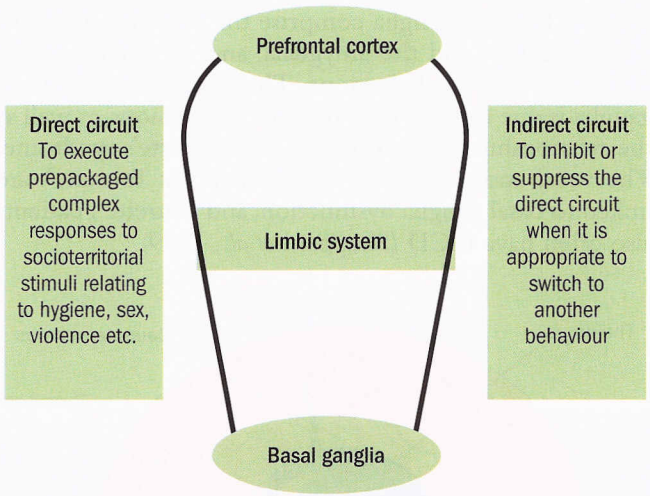


Figure 44.2 Saxena *et al.*'s (1998) model of OCD

An evaluation of Saxena et al.*'s model*

- This popular model meshes well with neurobiological evidence from various sources (Claridge & Davis, 2003). For example, brain imaging studies have consistently shown *increased* activity in the PFC (usually involving the right orbitofrontal cortex) in unmedicated OCD individuals (they display 'overheated' frontal lobes). These hyperactive areas tend to become normal when patients receive effective treatment (either drug therapy or behavioural therapy).
- Rauch *et al.* (1994) stimulated OCD symptoms by presenting patients with stimuli especially selected for them (such as a glove contaminated with household rubbish). This produced increased blood flow in the PFC and certain regions of the basal ganglia. Also, OCD patients have a smaller putamen than controls (Rosenberg *et al.*, 1997).
- The PFC plays an important role in assessing the behavioural significance of biologically important stimuli. So increased frontal lobe activity may relate to obsessional thinking – but not necessarily to compulsions. But the basal ganglia (and cerebellum, which stores behavioural programs, such as conditioned responses) may function to control compulsive urges. People with diseases involving pathology of the basal ganglia (such as Parkinson's and Huntingdon's disease) often show compulsive symptoms similar to those of OCD patients.

(b) The serotonin hypothesis (SH): Abnormal levels of brain serotonin (5-HT) have been proposed as the cause of OCD. The SH is derived largely from the consistent finding that the group of drugs called *serotonin reuptake inhibitors* (SRIs) help reduce OCD symptoms (see the discussion of depression below). SRIs prevent reuptake of serotonin in the brain, making more available. So it's inferred from their success with OCD patients that OCD must be caused by a *deficiency* of serotonin.

This has been confirmed by brain imaging studies. Also, there are several case reports of symptom improvement when OCD patients use *hallucinogenic drugs* (such as LSD). These drugs are potent stimulators of brain 5-HT. Others have reported a worsening of symptoms after patients take 5-HT antagonist drugs – that is, drugs that *reduce* 5-HT levels (Claridge & Davis, 2003).

An evaluation of the SH

- Although 5-HT is clearly important in understanding the causal mechanisms of OCD, it's not the only neurotransmitter likely to be involved. Excessive *dopamine* may also play a part. For example, haloperidol (a dopamine D2 receptor antagonist) has been used for improving treatment response to SRIs. By blocking D2 receptors, the indirect pathway can better counteract the action of the direct pathway (see Saxena *et al.*'s model above) (Claridge & Davis, 2003).
- Many patients are only partially responsive to SRIs. Almost a third don't respond at all. A range of other 5-HT agonists (which increase 5-HT levels) also fail to improve symptoms – and some even make them

worse. 5-HT depletion studies have typically shown *no* reversal of the symptom improvement induced by SRIs. This reversal is what we'd expect if OCD really is caused by too little 5-HT. Nor does 5-HT depletion have any ill-effects on unmedicated OCD patients (Claridge & Davis, 2003).

- Just because drugs such as SRIs increase 5-HT activity and are effective in alleviating the major symptoms of OCD, it doesn't necessarily follow that the disorder is caused by an excess or depletion of that neurotransmitter. This is like saying that because taking an aspirin gets rid of a headache, headaches are caused by a deficiency of acetylsalicyclic acid (Claridge & Davis, 2003). (This same faulty logic applies, of course, to other disorders: see below.) In fact, more and more sophisticated brain imaging techniques are revealing that OCD symptoms could develop without *any* 5-HT involvement at all (Delgado & Moreno, 1998).

Box 44.5 The major characteristics of PTSD

Increased arousal: severe anxiety, irritability, insomnia, poor concentration. There may also be panic attacks and episodes of aggression.

Persistent defences of avoidance and repression: avoidance of reminders of the events, difficulty in recalling the events at will, detachment, inability to feel emotion ('numbness'), diminished interest in activities.

Intrusions: memories of the traumatic events break through the repression as repeated, intense imagery ('flashbacks'), and distressing dreams. Anxiety increases further during flashbacks and reminders of the event.

There may also be additional maladaptive coping responses, such as excessive use of alcohol and drugs.

(Based on Gelder *et al.*, 1999)

Post-traumatic stress disorder (PTSD)

During the First World War, many soldiers experienced *shell shock* (a shock-like state which followed the traumatic experiences of prolonged combat). In the Second World War, combat fatigue (or 'traumatic neurosis') was used to describe a similar reaction, characterised by terror, agitation or apathy, and insomnia.

Following the Vietnam War, the syndrome was renamed *post-traumatic stress disorder* (PTSD) and first appeared by that name in DSM-III (1980). The term describes an anxiety disorder which occurs in response to an extreme psychological or physical trauma outside the range of normal human experience (Thompson, 1997). Apart from war, such traumas include a physical threat to one's self or family, witnessing other people's deaths, and being involved in natural or human-made disasters. Examples include the Hillsborough football tragedy, the Herald of Free Enterprise cross-channel ferry disaster, and the Paddington rail disaster.



197 people died when the *Herald of Free Enterprise* ferry capsized off Zeebruge, Belgium, in 1987

While Freud considered that at the root of many neurotic disorders is the inability to remember bad experiences (see Chapter 45), the opposite is true in the case of PTSD. As Brewin (1998) says:

> The curse of perpetual reminiscence is a cardinal feature of post-traumatic stress disorder (PTSD), in which sufferers attempt to avoid but cannot prevent vivid, emotionally arousing images repeatedly intruding into their waking or sleeping minds ...

Research has pointed to the fact that intrusive memories are also important in depression. Reynolds & Brewin (1997) compared matched samples of patients with PTSD and depression. While PTSD patients were a little more likely to have intrusive memories (which are also somewhat more vivid and frequent), they're otherwise very similar. Both groups were likely to experience very vivid and highly distressing memories on average several times per week and lasting several minutes (up to an hour). Also for both groups, they're mostly accompanied by physical sensations and a feeling of reliving the event. One of the few differences was that PTSD patients were more likely to report feeling helpless and to have a *dissociative experience,* such as feeling they were leaving their body or seeing themselves as an object in their memory.

PTSD may occur immediately following a traumatic experience or weeks, months and even years later. In the Vietnam War, there were relatively few cases of shell shock or combat fatigue, but on their return to the USA soldiers found it more difficult adjusting to civilian life than did those who fought in the two world wars.

As well as the symptoms described in Box 44.5, Vietnam veterans felt extreme guilt at having survived, while so many of their comrades hadn't. This is also common among survivors of disasters, as are exaggerated startle responses to unexpected stimuli.

Psychological explanations

Unlike other anxiety disorders, the causes of PTSD are largely, if not exclusively, *environmental*. While phobias or OCD tend not to have common background factors, all PTSD sufferers share the experience of having been involved in a profoundly traumatising event.

Sufferers tend to show classically conditioned responses to stimuli present at the time of the event (e.g. Charney *et al.*, 1993). But since not everyone exposed to the traumatic event develops PTSD, other factors must be involved, such as individual differences in people's appraisal of events as stressors (see Chapter 12), and the recovery environment (such as family support and support groups).

The return of memories many years after the traumatic event suggests that keeping busy with socially valued life roles enables a person to avoid processing the traumatic memories. But this prevents the memories from becoming integrated into the individual's worldview. In conditioning terms, thinking about the traumatic event would lead to extinction of the responses associated with it.

Biological explanations

According to Butler (1996), PTSD can be seen as the breakdown of the normal stress response.

ASK YOURSELF...

- Remind yourself how the normal stress response works (see Chapter 12, pages 204–208). Why do you think Butler (1996) describes PTSD as 'too much of a good thing'?

When stress becomes overwhelming, too much adrenaline and noradrenaline produce confusion, and impair learning and memory. Repeated adrenaline rushes seem progressively to sensitise brain chemistry, provoking even greater floods of adrenaline at lower thresholds. For example, one study cited by Butler found that those with childhood histories of physical or sexual abuse were significantly more likely to develop PTSD after combat in Vietnam than those who were without such histories.

Years after the trauma, the nervous systems of PTSD sufferers remain always on alert (as manifested in the startle responses and general emotional reactivity). Butler cites a study of Vietnam veterans who were injected with *yohimbine*, a psychoactive drug from South America that stimulates secretion of noradrenaline. While non-traumatised control participants reported a little heart-pounding, nine of the 15 veterans suffered panic attacks and six had full-blown flashbacks. Yohimbine temporarily disables alpha-2 receptors – brain cell structures which slow the release of adrenaline to the brain. Other research shows that PTSD patients have 40 per cent fewer alpha-2 receptors than normal controls.

The brains of PTSD sufferers release *endorphins* (natural opiates with pain-killing properties: see Chapter 4) far above normal levels, causing a drop in pain sensitivity. This over-activation of a natural anaesthetic response, in the face of something rationally known not to be dangerous (such as watching a movie about Vietnam) may partly explain the numbness reported by some.

Research suggests that moments of overwhelming terror can do lasting damage to the hippocampus (see Chapter 17). Butler (1996) cites three studies using MRI scans which found significant reductions in the size of the hippocampus of traumatised people, including women with histories of prolonged child sexual abuse. Those with the smallest hippocampi displayed the most intense PTSD symptoms, including dissociation (the tendency to 'space out', feel detached from one's body, and have unpredictable lapses of memory). This hippocampal damage may well be caused by an over-*reduction* in cortisol levels (see Chapter 12), which occurs after prolonged stress. Low cortisol levels are associated with brain cell death in the innermost section of the hippocampus (the *dentate gyrus*), thought to contribute to creativity and the recall of long-term memories.

CRITICAL DISCUSSION 44.1 The positive side of PTSD

- Some researchers have described PTSD as continuous with normal adaptive behaviour, rather than a distinctly abnormal reaction (Brewin *et al.*, 1996; Williams & Joseph, 1999). 'Post-traumatic growth' (Tedeschi, 1999; Tedeschi & Calhoun, 1996; Tedeschi *et al.*, 1998) describes positive changes in the areas of perception of self, relationships with others, and philosophy of life.
- The underlying principle is a *changed perspective*. For example, having had sight of death, survivors emerge sadder but wiser. It's this wisdom that prompts survivors to redefine their philosophy of life: it's no longer taken for granted (Joseph *et al.*, 1993), and everyday existence is consequently valued in a new way.
- This is consistent with Seligman & Csikszentmihalyi's (2000) call for the expansion of psychology into a science of *optimal human functioning* – at both the individual and social/community levels. As Linley (2000) puts it:

> From being a discipline with a primarily pathological focus, psychology can expand ... to embrace the pinnacles of human attainment ... psychology can show individuals and their societies how they may flourish, both in the face of and absence of adversity, so that genuine fulfilment might be achieved.

MOOD (AFFECTIVE) DISORDERS

Manic disorder (mania)

Mania is a sense of intense euphoria or elation. A characteristic symptom is a 'flight of ideas': ideas come rushing into the person's mind with little apparent logical connection, and there's a tendency to pun and play with words. Manics have a great deal of energy and rush around, usually achieving little and not putting their energies to good use. They need little sleep and may appear excessively conceited (having 'grandiose ideas' or delusions). They display *disinhibition,* which may take the form of a vastly increased sexual appetite (usually out of keeping with their 'normal' personality), or going on spending sprees and building up large debts.

As we saw in the *Introduction and overview,* mania usually occurs in conjunction with depression (*bipolar disorder*). But in the rare cases in which mania occurs alone, 'bipolar' is also used (*unipolar* refers to episodes of depression alone: see below). Most patients with mania eventually develop a depressive disorder (Gelder *et al.*, 1999).

Strictly, mania on its own, and mixed episodes of both mania and depression are called 'Bipolar 1'. 'Bipolar 2' refers to major depression combined with *hypomania* (less extreme than full-blown mania). 'Manic-depressive' refers to both the unipolar and bipolar forms of affective disorder. Bipolar disorder is much less common than unipolar, occurring in fewer than 10 per 1000, usually before age 50. Each episode lasts about three months (Gelder *et al.*, 1999). Bipolar 1 (mixed episodes) is more common than either Bipolar 1 (mania alone) or Bipolar 2. It affects 1 per cent of the population and usually first appears in the twenties; it occurs equally often in men and women.

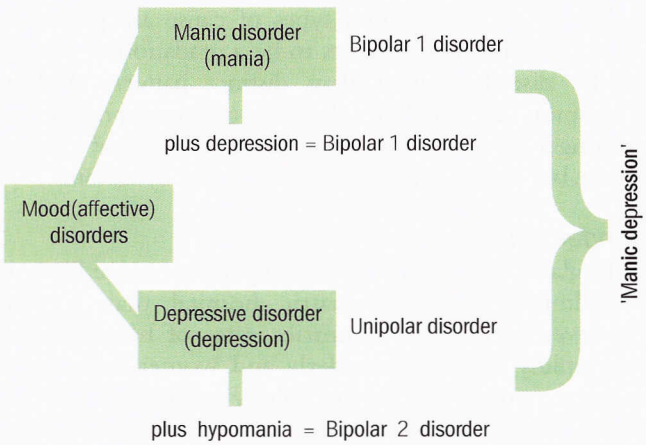


Figure 44.3 The relationship between manic and depressive disorders

Unipolar (depressive) disorder (UDD)

Depression represents the complete reverse of mania. The depressed person experiences a general slowing down and loss of energy and enthusiasm for life. UDD may begin at any time from adolescence onwards, with the average age of onset being the late twenties. With treatment, each episode lasts two to three months, six months or longer if untreated. It affects 20–30 men per 1000, but 40–90 women per 1000 (see Critical Discussion 44.3, page 787). One exception to this general rule is that Jewish men and women are about equally likely to be diagnosed. Jewish men are also more likely to be diagnosed than other male groups (Levav *et al.*, (1997). About 10 per cent of patients eventually commit suicide (Gelder *et al.*, 1999).

CRITICAL DISCUSSION 44.2 The rising tide of suicide

- According to Persaud (in Revill, 2004), the Freudian view is that the act of suicide is a repressed homicide. By hating someone for leaving you, you turn the aggression in on yourself. In killing yourself, of course, you make the other people feel terrible.
- Most of us have suicidal thoughts at some point in our lives. The key factor seems to be how rooted or connected we are to others. Many people will have contemplated suicide, but what stops most of us is our relationships.
- The suicide rate among young British men has tripled since the 1980s, making it the leading cause of death for men aged 19–35. Although numbers fell slightly in 2003, 1300 young men still take their own lives each year in England alone.
- Men tend to use different methods of suicide from women; the former tend to shoot or hang themselves, while the latter usually take an overdose of pills.
- Persaud believes that female disappointment in the modern male (as reflected in the US TV series *Sex and the City*), combined with men's not knowing what to do about it and their inability to admit vulnerability, are part of the explanation for the frightening increase in numbers of male suicides.
- In addition, mental health charities fear that the media are becoming increasingly irresponsible in their treatment of suicide and self-harm (Doward, 2004).

Are there different kinds of depression?

◎ According to Claridge & Davis (2003), mood disorders and anxiety disorders (see below) have much in common:

- they occur much more frequently than other (types of) disorders
- their symptoms are much more continuous with normal personality
- there's considerable symptom overlap between them (such as a focus on negative and threatening events and stimuli); it's even been proposed that there should be a new DSM category, namely

'Mixed Anxiety-Depression' (MAD); many patients with severe psychological impairment don't necessarily meet the full diagnostic criteria for either anxiety or depressive disorder
- according to DSM, 80–90 per cent of depressed patients have symptoms associated with anxiety disorders (such as poor concentration, sleep disturbance, loss of energy, irritability, health worries and panic attacks); conversely, 'depressed mood' is an associated feature of all anxiety disorders
- stress is an important causal factor in both, as well as a consequence of both.

◎ The idea that 'depression' may actually comprise a cluster of loosely connected, distinct disorders has been around since the early 1900s. Claridge and Davis claim that there are at least two quite distinct forms of depression:

- *melancholic type,* characterised by profound *anhedonia* (the inability to find pleasure in life), associated with apathy, inactivity, excessive sleeping and severely depressed mood
- *agitated type,* characterised by difficulty in recovering from emotionally stressful events, and obvious signs of anxiety and restlessness.

Table 44.1 Symptoms of clinical depression (major depressive disorder) (based on Spitzer *et al.*, 1978)

In order to be said to be suffering from clinical depression, a person should have experienced a number of the following symptoms together over a period of time.

A	Persistent low mood (for at least two weeks)	
plus		
B	At least five of the following symptoms:	
	1	Poor appetite or weight loss, or increased appetite or weight gain (change of 1 lb [450 g] a week over several weeks or 10 lb [4.5 kg] in a year when not dieting).
	2	Sleep difficulty, or sleeping too much.
	3	Loss of energy, fatiguability or tiredness.
	4	Body slowed down or agitated (not mere subjective feeling of restlessness or being slowed down, but observable by others).
	5	Loss of interest or pleasure in usual activities, including social contact or sex.
	6	Feelings of self-reproach, excessive or inappropriate guilt.
	7	Complaints or evidence of diminished ability to think or concentrate such as slowed thinking or indecisiveness.
	8	Recurrent thoughts of death or suicide, or any suicidal behaviour.



Winston Churchill (1874–1965), famous British Prime Minister – and depressive

Endogenous vs exogenous depression

A distinction that's deeply embedded within psychiatric thinking is that between *endogenous* ('from the inside') and *reactive* (or 'exogenous', from the outside) depression. The former was intended to denote depression arising from biochemical disturbances in the brain, while the latter was seen as being caused by stressful life experiences. These were also classified as psychotic and neurotic depression respectively, implying that the former is much more serious (see Table 43.4, page 767).

However, the distinction is controversial. According to Gelder *et al.* (1999), both types of cause are present in every case, and there appears to be a gradation of severity of the disorder, rather than distinct patterns. Indeed, Champion (2000) believes that endogenous depression can no longer be defined in terms of the absence of external causes, but by the presence of more severe symptoms.

Gender differences

In England, a woman is about 40 per cent more likely to be admitted to a psychiatric hospital than a man. However, as in other countries, rates of hospitalisation rise rapidly among the elderly and women outnumber men by two to one in the elderly population (75 and over). When admission rates for other categories of disorder are taken into account (such as the very similar rates between males and females for schizophrenia), it's depression that contributes most to the high overall rate of treated mental illness among women (Cochrane, 1995). While there are no sex differences in the rate of bipolar disorder (Strickland, 1992), women are two to three times more likely to be diagnosed with unipolar disorder than men (Williams & Hargreaves, 1995).

CRITICAL DISCUSSION 44.3 Are women naturally disposed towards depression?

- A popular and widely held view is that women are naturally more emotional than men, and so are more vulnerable to emotional upsets. Hormonal fluctuations associated with the menstrual cycle, childbirth, the menopause and oral contraceptives have all been proposed as the mechanism which might account for the sex difference (Cochrane, 1995).
- Cochrane believes that there's no evidence that biochemical or physiological changes involved in the menopause, for example, have any direct effect on psychological functioning. But while the hormonal changes of the menstrual cycle may not be sufficient on their own to cause clinical depression, they may tend to reactivate memories and feelings from a previous period of major depression (caused by other factors) (Williams & Hargreaves, 1995).
- According to the UK Department of Health, the months surrounding childbirth carry the greatest risk for women of developing mental illness. The most common is *mood disorder with postpartum onset or postnatal depression* (PND), affecting 10–15 per cent of all new mothers (Hill & Revill, 2004).
- However, some believe that mothers are being overdiagnosed with PND by a medical industry intent on pathologising childbirth. The 'baby blues' affects about 90 per cent of new mothers and is associated with hormonal changes, exhaustion after the birth and rapid readjustment to a different way of life. PND, however, is a far more serious condition and can make it very difficult for the mother to bond with her child (Hill & Revill, 2004).
- Hormonal changes cannot explain why the discrepancy in the female/male rates of depression is so large or why only some women are affected. Cochrane (1995) identifies several *non-biological explanations* of women's greater susceptibility to depression:
  - girls are very much more likely to be abused, particularly sexually, than boys, and victims of abuse are at least twice as likely to suffer clinical depression in adulthood as non-victims. Abuse alone could account for the female–male difference in depression rates
  - a woman's acceptance of the traditional female gender role involves accepting that she'll have relatively little control over her life. This may contribute to *learned helplessness* (see below)
  - the female–male difference in the rate of depression is at its greatest between the ages of 20 and 50, during which time marriage, childbearing, motherhood, and the 'empty nest' syndrome will be experienced by a majority of women
  - Cochrane (1983) argues that depression may be seen as a *coping strategy* that's available to women, in contrast to those of men (including alcohol and drugs, and their work). Not only is it more acceptable for women to admit to psychological symptoms, but these may represent a means of changing an intolerable situation. But Callaghan & O'Carroll (1993) warn that:

    Unhappiness about their domestic, social, and political circumstances lies at the root of many women's concerns. This unhappiness must not be medicalised and regarded as a 'female malady' ...

Explanations of depression

In addition to the causal factors discussed in Critical Discussion 44.3, all the major theoretical approaches have attempted to explain depression. Probably the most influential of these – both currently and in recent years – has been the cognitive model, especially Beck's (1963) *cognitive triad of depression*. Because his form of cognitive–behaviour therapy (CBT) is mainly intended to treat depression, this – and other cognitive explanations – will be discussed in Chapter 45.

The role of genetic factors

- *First degree relatives* (parents, siblings and children) of severely depressed patients have a higher risk of affective disorders (10–15 per cent) than the general population (1–2 per cent). This increased risk is even higher among relatives of patients with early onset. But, curiously, among first degree relatives of patients with bipolar disorder there are more cases of UDD than bipolar disorder (Davison & Neale, 2001).
- Concordance for bipolar disorder (about 70 per cent) is the same among MZs reared together or apart. This compares with 23 per cent for DZs.
- Adoption studies confirm the importance of genetic factors. The natural parents of adoptees with a bipolar disorder have a higher rate of affective disorder than do natural parents of adoptees without bipolar disorder (Gelder *et al.*, 1999).
- Genetic factors in UDD seem to be less decisive than in bipolar disorder. Also, there's some evidence that genetic factors are more important in women than in men (Davison & Neale, 2001: but see Critical Discussion 44.3).

Neurochemical explanations

According to the *monoamine hypothesis* (MAOH), a depletion of serotonin, noradrenaline and/or dopamine underlies the melancholic symptoms of depression. High levels induce mania. Serotonin (5-HT), norepinephrine (noradrenaline) and dopamine are collectively known as *monoamine oxidase* (MAO) *transmitters*. By far the greatest number of studies on these have involved 5-HT (Claridge & Davis, 2003).

The supporting evidence is based largely on working backwards from what's known about the mechanisms of drugs that either induce or reduce depressive symptoms.

It was discovered in the mid-1950s that depression was a common side-effect of one of the first effective drugs for treating high blood pressure (reserpine). It was known that reserpine reduced the levels of brain 5-HIAA (a chemical produced when 5-HT is broken down). Also in the 1950s, tricyclics and monoamine oxidase inhibitors (MAOIs) were found to be effective in relieving depression (see Chapter 45):

- *tricyclics* prevent some of the reuptake of both noradrenaline and serotonin; this leaves more of the transmitter in the synaptic gap, making transmission of the next nerve impulse easier (see Chapter 4)
- the newest antidepressants are called *serotonin reuptake inhibitors* (SRIs), because they act more selectively on serotonin (this is why they're sometimes called SSRIs – *specific serotonin reuptake inhibitors*). They raise levels of serotonin (5-HT) and have a well-established antidepressant effect; examples are fluoxetine (most familiarly marketed as Prozac). Because SSRIs are effective in treating UDD, a stronger link has been established between low levels of 5-HT and depression (Davison & Neale, 2001; Gelder *et al.*, 1999)
- MAOIs prevent the enzyme monoamine oxidase (MAO) from breaking down the neurotransmitters; this increases the levels of both 5-HT and noradrenaline in the brain. Like the tricyclics, this compensates for the abnormally low levels of these neurotransmitters in depressed people.

An evaluation of the MAOH

- The MAOH is the longest-standing and most persistent biological theory of depression (Claridge & Davis, 2003).
- It's known that all the main antidepressants have an immediate effect on the levels of 5-HT and noradrenaline in the brain. But it sometimes takes up to 7–14 days for them to have any noticeable effect on patients' symptoms. It seems that by the time the drugs begin to 'work', the neurotransmitter levels have returned to their previous state. So a simple increase in neurotransmitter levels isn't a sufficient explanation for why the drugs alleviate depression (Davison & Neale, 2001).
- An *indirect* way of testing the role of 5-HT is to measure concentrations of a particular *metabolite*. This is a by-product of the breakdown of the neurotransmitters, found in urine, blood serum and cerebro-spinal fluid (CSF). These are found to be lower in patients with depression, especially in those who commit violent suicide (Claridge & Davis, 2003). This could, however, be the result of many different kinds of biochemical abnormality. Also, the lower concentrations probably aren't a direct indication of levels of either 5-HT or noradrenaline *in the brain*. Metabolites measured this way could reflect neurotransmitters anywhere in the body (Davison & Neale, 2001).
- A more *direct* test comes from experimental depletion studies involving normal participants. When they're given drugs that *reduce* levels of 5-HT and noradrenaline in the brain, these people *don't* usually experience depressive symptoms (Claridge & Davis, 2003). Nor do the symptoms of unmedicated depressed patients become worse (Delgado, 2000).

Box 44.6 Other risk factors for depression

- Tebartz *et al.* (2000) found that depressed people have an enlarged amygdala (which is known to play a role in emotional information processing: see Chapter 4). The amygdalae of female patients were significantly larger than those of males.
- Chronically (naturally occurring) low levels of cholesterol are associated with depressive symptoms and suicide, even when age, energy intake, alcohol consumption and the presence of chronic disease are controlled (Steegmans *et al.*, 2000).

Learned helplessness theory (LHT)

Strictly, learned helplessness is the original of three related cognitive theories of depression. The basic premise of *learned helplessness theory* (LHT) is that depression in humans is a form of *learned* helplessness (LH) (Seligman, 1974). This is based on Seligman's experiments with dogs (see Key Study 11.4, page 182). On the basis of these observations, Seligman proposed that animals acquire a sense of helplessness when confronted with uncontrollable aversive stimulation. Later, this sense of helplessness impairs their performance in stressful situations that *can* be controlled. They seem to lose the ability and motivation to respond effectively to painful stimulation.

By extension, LH could provide an explanation for at least certain forms of depression in humans. Seligman believed that, like his dogs, many depressed people appear passive in the face of stress. They fail to initiate actions that might allow them to cope. Also, like depressed people, Seligman's dogs lost their appetite and lost weight. They also showed reduced levels of noradrenaline.

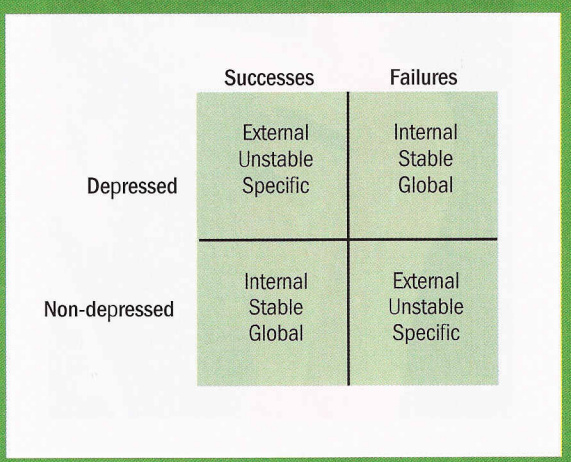
By 1978, research with humans began to reveal several inadequacies of LHT. For example, many depressed people blame themselves for their failures, but this is incompatible with the claim that they see themselves as helpless. Also, the experience of being unable to control the outcome of one particular situation (helplessness) doesn't necessarily lead to clinical depression in most people. These and other findings suggest very strongly that LH cannot tell the whole story. LHT was revised by Abramson, Seligman and Teasdale in 1978. The major change they proposed was in terms of *attribution theory principles.*

ASK YOURSELF...

- How do you think this modified LHT might have tried to explain depression? (See Chapter 23.)

Box 44.7 The attributional theory of depression (Abramson *et al.*, 1978)

- When we experience failure, for example, we try to explain it (just as we try to account for our successes); this is perfectly 'normal'. What's associated with depression is a particular *pattern* of attributions (or *attributional style*) – that is, a tendency to make particular kinds of *causal inferences*, rather than others.
- The 'depressed attributional style' (DAS) is based on three key dimensions, namely *locus* (whether the cause is internal or external, to do with the actor him/herself or some aspect of the situation), *stability* (whether the cause is stable or unstable, a permanent feature of the actor or something transient), and *global* or *specific* (whether the cause relates to the 'whole' person or just some particular feature or characteristic). The depressed person believes that his/her failure:
  - (a) is caused by *internal* factors ('I'm stupid')
  - (b) reflects *stable*, long-term, relatively permanent factors ('I never do well on tests or exams')
  - (c) reflects a *global*, pervasive deficiency – that is, failure applies to all or most aspects of his/her life ('I get everything wrong').



Attributional styles for success and failure in depressed people (based on Abramson *et al.*, 1978; Abramson & Martin, 1981)

- People diagnosed as clinically depressed are more likely to show this pattern when given, for example, the *Attributional Style Questionnaire* (ASQ) (Seligman *et al.*, 1979).
- Equally important, the person who's *prone* to becoming depressed may also display the DAS. It's believed to play a mediating role between negative life events and adverse physical and mental health outcomes. When such depression-prone people experience stressors, they're more likely to develop the symptoms of depression, and their self-esteem is shattered (Peterson & Seligman, 1984).

An evaluation of the attributional theory

- This clearly is an improvement on LHT, because it adds in cognitive factors that are missing from the latter. There's a vast amount of research into attribution within social psychology, so Abramson *et al.* are drawing on a well-established research area to supplement the idea of helplessness. The concept of attributional style represents a *diathesis*, a predisposition to develop a particular mental disorder under stressful conditions (see the discussion of schizophrenia below, page 798).
- Seligman *et al.* (1979) gave their ASQ to college students. As predicted by the theory, mildly depressed students more often attributed their failures to personal (internal), global and stable inadequacies than did non-depressed students.
- A problem faced by most cognitive explanations of psychopathology is accounting for where the DAS comes from in the first place. It's thought to stem from childhood experiences, but there's little empirical support for this claim. However, Rose *et al.* (1994) found that DAS is related to sexual abuse in childhood, as well as to parental overprotectiveness, harsh discipline and perfectionistic standards.
- *Hopelessness theory* (HT) (Abramson *et al.*, 1989) is the latest version of the theory. According to HT, some forms of depression (hopelessness depression) are caused by a state of hopelessness, an expectation that desirable outcomes won't occur, or that undesirable ones will occur and that there's nothing the person can do to prevent them (that is, helplessness). HT proposes that there may be other diatheses in addition to DAS. One of these is low self-esteem and a tendency to infer that negative life events will have serious negative consequences.

An overall evaluation of helplessness/hopelessness theories

Davison & Neale (2001) and Davison *et al.* (2004) point out some general problems with all three helplessness-related theories.

- Seligman (1974) was originally trying to explain the similarity between LH and what used to be called *reactive depression* (see above, page 786). Abramson *et al.* (1989) talk about a hopelessness depression, which refers both to the presumed cause of the depression and to a set of symptoms that don't quite match the DSM criteria.
- Some research has been conducted with clinical populations (people actually diagnosed as having a depressive disorder) (such as Abramson *et al.*, 1978). But many studies have involved college students selected on the basis of the Beck Depression Inventory (BDI), or have simply tried to predict increases in BDI scores. But the BDI wasn't designed

to diagnose depression, only to assess its severity among those already diagnosed. People selected on the basis of raised BDI scores aren't comparable to those with clinical depression. For example, high scorers have been found to score much lower when retested two to three weeks later. Also, the finding that the ASQ can predict BDI scores doesn't necessarily mean that it can predict the onset of actual clinical depression.

- We've already noted the *comorbidity* of depression and anxiety. We need to be sure that the theories are truly about depression, rather than about negative affect in general. DAS seems to be related to anxiety and general distress, as well as depression.
- A key assumption is that the DAS is a persistent part of the make-up of the depressed person. As a diathesis, it must be 'in place' before the person experiences some stressor. But Hamilton & Abramson (1983) showed that it disappears following a depressive episode.

Despite these problems, Davison & Neale (2001) and Davison *et al.* (2004) conclude that these theories have clearly stimulated a great deal of research and theorising about depression. This is likely to continue for many years to come.

Culture and depression

While there are an estimated 340 million people worldwide affected by depressive disorders (making it the most common of all mental disorders: Lyddy, 2000), Price & Crapo (1999) point out that various researchers have denied the presence of native concepts of depression among groups as diverse as the Nigerians, Chinese, Canadian Inuit, Japanese, Malaysians, and the Hopi Native Americans. Price and Crapo ask:

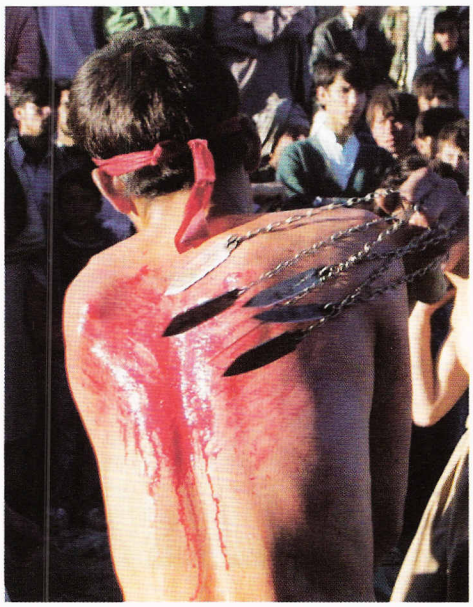
If depression, as currently defined in Western culture and psychiatric diagnosis, is not found in non-Western cultures, how do we know that 'depression' is not merely a Western folk concept, analogous to other culture-specific conditions such as koro, kayak-angst, amok or susto?

CRITICAL DISCUSSION 44.4 The social construction of happiness and sadness

- According to Moghaddam (2002):

  ... depression, as it is medically recognized and treated in Western societies, is fundamentally a social construction. This is not to say that people in other historical eras and in other societies have not experienced the same biological processes as do depressed people in Western societies today, but that the meanings and implications of experiences arising from such processes have been different in major ways ...

- For example, in modern western societies, especially the USA, greater and greater emphasis is being placed on presenting the self in a positive, happy way ('I'm doin' great'). But while this might be normative in the USA, it wouldn't be in most eastern cultures, and someone displaying such a style would be regarded negatively.
- Conversely, even in western culture, 'negative' emotions (sadness, melancholy, depression) haven't always been shunned. They're a normal part of life and should be valued as an essential feature of human experience. The 'cult of melancholy' during the mid-eighteenth to late nineteenth centuries was reflected in poetry and is still prominent in Farsi-speaking countries. For example, among Shiite Muslims (the religion of over 96 per cent of Iranians and 45 per cent of Iraqis) several important religious ceremonies involve participants weeping and wailing, self-flagellation, and expressing – and experiencing – misery.



A flagellating Shi'ite Muslim

- The feelings of guilt and self-blame, loneliness and anxiety, commonly reported by depressed people in western societies (see above) don't seem to be part of people's experience in non-western societies. The latter typically look outside themselves, and refer to the rain, seasons, fate and various other external phenomena to explain their experiences (Moghaddam, 2002).

According to Kaiser *et al.* (1998), DSM-IV recognises the vital role of culture in the expression and diagnosis of disorders (see Chapter 43). It encourages clinicians to keep cultural considerations in mind when assessing patients on each of the five axes. In the section dealing with depression, conditions which appear most often in specific cultures are outlined, as well as cultural variations in the manifestation of symptoms. For example, in some

cultures people tend to present with somatic complaints (such as aches and pains), while in others affective symptoms are more common (such as sadness). The task of the clinician is to take the norms of the individual patient's cultural reference group into account, while at the same time avoiding cultural stereotypes (Kaiser *et al.*, 1998).

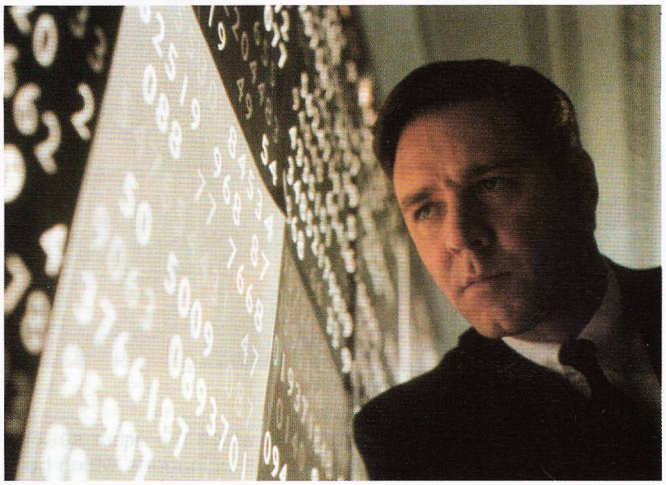
ASK YOURSELF...

- How does this discussion of cultural aspects of depression relate to the discussion in Chapter 43 of whether schizophrenia is culture-free? (See Critical Discussion 43.3, page 768.)

SCHIZOPHRENIA

As we noted in the *Introduction and overview,* what we now call schizophrenia was originally called *dementia praecox* ('senility of youth') by Kraepelin (1896). Kraepelin believed that the typical symptoms (namely, delusions, hallucinations, attention deficits, and bizarre motor activity) were due to a form of mental deterioration which began in adolescence. But Bleuler (1911) observed that many patients displaying these symptoms didn't go on deteriorating, and that illness often began much later than adolescence. Consequently, he introduced the term 'schizophrenia' instead (literally 'split mind' or 'divided self') to describe an illness in which 'the personality loses its unity'.

According to Clare (1976), the diagnosis of schizophrenia in the UK relies greatly on Schneider's (1959) *first-rank symptoms* (FRSs).



Russell Crowe as John Forbes Nash, mathematical genius who develops schizophrenia, in *A Beautiful Mind* (2001)

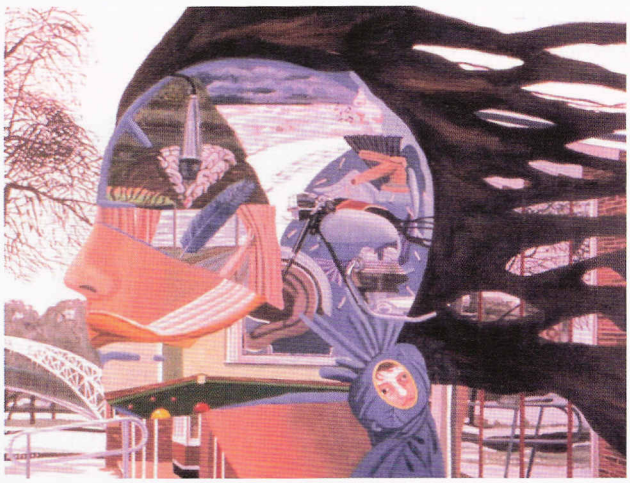
Schneider's FRSs are *subjective experiences,* which can only be inferred on the basis of the patient's verbal report. Slater & Roth (1969) regard hallucinations as the least important of all the major symptoms, because they aren't exclusive to schizophrenia (this is also true of delusions: see below). Slater & Roth identify four additional symptoms, which are *directly observable* from the patient's behaviour.

Table 44.2 Schneider's (1959) first-rank symptoms of schizophrenia

Passivity experiences and thought disturbances: *thought insertion* (thoughts are inserted into one's mind from outside and are under external influence), *thought withdrawal* (thoughts are removed from one's mind and are externally controlled), and *thought broadcasting* (thoughts are broadcast to/otherwise made known to others). External forces may include the Martians, the Communists and the Government.
Auditory hallucinations (in the third person): *hallucinatory voices* are heard discussing one's thoughts or behaviour as they occur (a kind of running commentary), arguing about oneself (or using one's name), or repeating one's thoughts out loud/anticipating one's thoughts. They're often accusatory, obscene and derogatory, and may order the patient to commit extreme acts of violence. They're experienced as alien or under the influence of some external source, and also in the light of concurrent delusions (e.g. the voice of God or the devil: see below). The hallucinations of patients with *organic* psychoses are predominantly visual.
Primary delusions: *false beliefs* (incompatible with reality, usually of *persecution* or *grandeur*) held with extraordinary conviction, impervious to other experiences or compelling counter argument/contradictory evidence. The patient may be so convinced of their truth that they act on the strength of their belief, even if this involves murder and rape (as in the case of Peter Sutcliffe, the 'Yorkshire Ripper').

Table 44.3 Major symptoms of schizophrenia (based on Slater & Roth, 1969)

Thought process disorder: the inability to keep to the point, being easily distracted/side-tracked. In *clang associations* (e.g. 'big', 'pig', 'twig'), words are 'thrown together' based on their sound rather than their meaning; this produces an apparently incoherent jumble of words ('*word salad*'). Also the inability to finish a sentence, sometimes stopping in the middle of a word (*thought blocking*), inventing new words (*neologisms*) and interpreting language (e.g. proverbs) literally.
Disturbance of affect: events/situations don't elicit their usual emotional response (*blunting*), there's a more pervasive, generalised absence of emotional expression (as in minimal inflection in speech, and lack of normal variation in facial/bodily movements used to convey feelings: *flattening of affect*), loss of appropriate emotional responses (e.g. laughing/getting angry for no apparent reason, changing mood very suddenly, giggling when given some bad news: *incongruity of affect*).
Psychomotor disorders: muscles in a state of semi-rigidity (*catalepsy*), grimacing of facial muscles, limb twitching, stereotyped behaviours (such as constant pacing up and down), or assuming a fixed position for long periods of time, even several years in extreme cases (*catatonic stupor*).
Lack of volition: inability to make decisions or carry out a particular action, loss of will power or drive, loss of interest in what's going on and affection for friends/family.



Broah Schizophrene by Brian Charnley.
This is one of a number of pictures in which the artist set out to depict some of the delusions and hallucinations which he himself was experiencing while suffering from schizophrenia. These included the feeling that other people had access to all his thoughts

So who's right – Schneider or Slater and Roth?

According to Claridge & Davis (2003), 'first-rank symptoms' imply that:

> ... certain experiences of people clinically labelled 'schizophrenic' are so bizarre, incomprehensible, and distant from the normal that we are surely convinced that these must be central to the disorder.

In other words, FRSs seem to describe the 'fundamental', core features of schizophrenia. But like Slater and Roth, Bleuler regarded hallucinations and delusions as *accessory* (secondary) symptoms – that is, they're psychological consequences of a more primary, physical process that constitutes the real core. Claridge and Davis believe that the DSM and ICD criteria for diagnosing schizophrenia are a confused mix of these views – although there's a bias towards FRSs. They consider this bias to be understandable, since:

> ... Reporting that aliens in outer space are responsible for the thoughts in your head certainly seems more crazy than bemusing your neighbours with your stream of consciousness style of conversation!

But, unlike most diagnostic categories, there's *no essential* symptom that must be present for a diagnosis of schizophrenia to be made (Davison & Neale, 2001).

Positive and negative symptoms

Most of Schneider's FRSs are what are known as *positive symptoms* (or Type I) – that is, excesses or distortions, the *presence of active symptamatology*. They're what define, for the most part, an *acute* episode, and are occurrences beyond normal experience (Javitt & Coyle, 2004). Typically, patients have several acute episodes, between which are less severe but still very debilitating symptoms.

Most of Slater and Roth's symptoms are *negative* (Type II) symptoms. They consist of behavioural deficits, *lack of* or *poverty of* behaviour. These symptoms tend to endure beyond the acute episodes, and have a profound effect on patients' lives. The presence of several negative symptoms is a strong predictor of a poor quality of life two years after leaving hospital (Davison *et al.*, 2004).

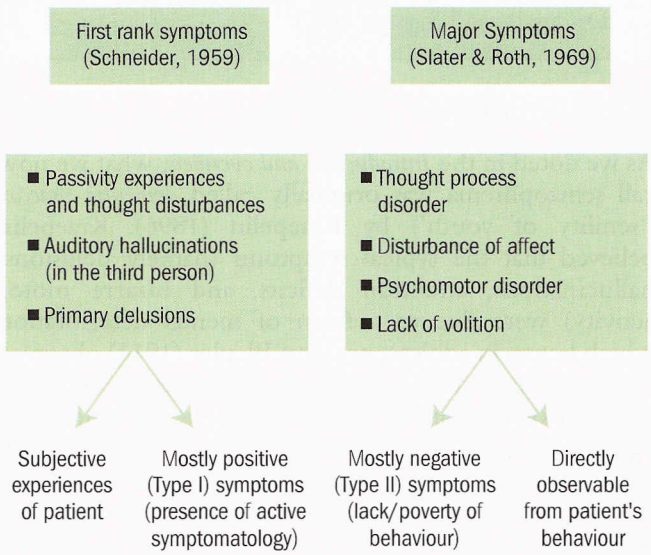


Figure 44.5 Summary of different attempts to define the major characteristics of schizophrenia

A third group of symptoms (*disorganised* or *cognitive*) refer to difficulty in maintaining a logical, coherent flow of information, maintaining attention and thinking on an abstract level, and bizarre behaviour (Davison *et al.*, 2004; Javitt & Coyle, 2004).

The distinction between positive and negative symptoms is very important in relation to research into the *causes* of schizophrenia (see below). According to Claridge & Davis (2003), currently the most widely quoted research classification is based on this distinction. But despite its popularity, they believe there are several problems with the distinction.

- Subjective accounts of psychotic experience suggest that it's doubtful whether negative symptoms define a *type* of schizophrenia. It's more likely that positive and negative symptoms represent alternating *states* occurring at different times within the same individual.
- If it *does* define a 'type' of schizophrenia, the negative form probably refers to the chronic end-state. Some patients progress into this after years of adaptation to their more acute ('florid') episodes.
- If a diagnosis of schizophrenia is based on an initial episode that consists solely of negative symptoms, it won't be very convincing. For example, how do

negative symptoms differ from those of depression (see above)? Also, flat affect can be a side-effect of antipsychotic medication (Davison *et al.*, 2004). For all these reasons, 'negative symptom' is ambiguous.

◎ Despite these criticisms, the positive/negative distinction (or some elaboration of it) is probably along the right lines as a rough template of how schizophrenic symptoms can vary. It's easily recognisable to psychiatrists and psychologists.

Varieties of schizophrenia

DSM-IV-TR distinguishes three types of schizophrenia (as initially proposed by Kraepelin). These are *disorganised, catatonic* and *paranoid*. These are described in Table 44.4.

Other types that have been identified include *simple* and *undifferentiated*.

Simple schizophrenia

This often appears during late adolescence and has a slow, gradual onset. The main symptoms are gradual social withdrawal and difficulty in making friends, aimlessness and idleness, blunting of affect, loss of volition and drive, and a decline in academic or occupational performance. Such people may become drifters or tramps, and are often regarded by others as idle and 'layabouts'. There are no major psychotic symptoms as in the other types. Only ICD actually distinguishes this type, which is still used in some countries.

Undifferentiated (atypical)

This category is meant to accommodate patients who cannot easily be placed elsewhere – that is, psychotic conditions that meet the general diagnostic criteria for schizophrenia, but that don't conform to any of the subtypes (due to either insufficient or overlapping



Robin Williams (left) in a scene from *Awakenings*. Patients with sleeping sickness (as portrayed in the film) have often been misdiagnosed with catatonic schizophrenia

Table 44.4 The three types of schizophrenia as identified by DSM-IV-TR

Disorganised schizophrenia

- This is probably the nearest thing to many people's idea about what a 'mad' or 'crazy' person is like (see text above). It's what Kraepelin called hebephrenic.
- It's normally diagnosed only in adolescents and young adults.
- Mood is shallow and inappropriate. Thought is disorganised, and speech is incoherent. This makes it difficult for the listener to follow. Delusions and hallucinations are fleeting and fragmentary, and behaviour is irresponsible, unpredictable, silly or mischievous, childish or bizarre. The person may sometimes become violent (if, for example, s/he's approached while hallucinating).
- The person may become incontinent, and tends to ignore personal appearance and hygiene.

Catatonic schizophrenia

- The patient may alternate between extremes such as (a) hyperkinesis (hyperactivity) and stupor (a marked reduction of spontaneous movements and activity), or (b) automatic obedience ('command automatism') and negativism (apparently motiveless resistance to all instructions/attempts to be moved or doing the opposite of what's asked).
- There may be episodes of apparently purposeless motor activity combined with a dreamlike (oneroid) state with vivid scenic hallucinations.
- Other characteristics are mutism, posturing (the voluntary assumption of inappropriate and bizarre postures) and waxy flexibility (maintenance of the limbs and body in externally imposed positions).
- Onset may be more sudden than with other types of schizophrenia, but the patient is likely to have shown previous apathy and withdrawal from reality.

Paranoid schizophrenia

- This is dominated by relatively stable, often paranoid delusions (although delusions of grandeur are also quite common). These may be accompanied by vivid auditory hallucinations.
- Also common are ideas of reference. The patient incorporates unimportant events within a delusional framework, and reads personal significance into other people's trivial actions. For example, they might think that overheard fragments of a conversation, or something on TV or in a magazine, are about them.
- Paranoid schizophrenics also tend to be agitated, argumentative, angry and sometimes violent, but in other respects, they're less disturbed (the personality is better preserved) than in the other kinds. The person remains emotionally responsive, and s/he is more alert and verbal than other types. Although their language is filled with references to delusions, it isn't disorganised.
- It's the most homogeneous type – that is, paranoid schizophrenics are more alike than those in other categories.

(Based on Gelder *et al.*, 1999; Davison and Neale, 2001)

symptoms). '*Residual*' is used when the patient no longer meets the full criteria, but still shows some signs of illness. This is a 'supplementary' type used in DSM.

Are the sub-types really different?

With the possible exception of paranoid schizophrenia, psychiatrists find it very difficult to tell these 'sub-types' apart. Some patients present symptoms of one sub-group at one time, then those of another sub-group later (Gelder *et al.*, 1999). Assigning someone to a particular sub-type provides very little information that helps either in treatment or predicting the outcome of the illness (poor predictive validity: Davison & Neale, 2001).

Also, catatonic symptoms are much less common now than they were 50 years ago. This could be because drug therapy works effectively on bizarre motor processes. Alternatively, the apparently high prevalence of catatonic schizophrenia during the early twentieth century may have been due to misdiagnosis (Boyle, 1991). There are similarities between it and *encephalitis lethargica* (sleeping sickness). Many cases of the latter may have been diagnosed as catatonic schizophrenia. This was portrayed in the film *Awakenings* (based on the book by Oliver Sacks).

Theories of schizophrenia

Box 44.8 Some general considerations regarding research problems and strategies (based on Claridge & Davis, 2003)

- Schizophrenia is *heterogeneous* (there are many different symptoms that can be involved, and different sub-types are officially recognised: but see above). This makes it almost certain that attempts to give a *single* explanation will fail.
- Patients don't just differ from each other (*between-subject differences*). The same patient can show considerable variation on different occasions (*within-subject differences*). For example, individual schizophrenics show enormous day-to-day fluctuations in simple physical responses (such as galvanic skin response/GSR). But most studies take only a *single* measure. This may be a particular problem in the case of schizophrenia, because what causes this individual instability of function may itself be an important clue to the nature of the disorder.
- People with acute symptoms may be distracted by delusional thoughts about the experimenter. Or they may just not be looking at the computer screen that test stimuli are presented on. A partial solution to this problem is to test people who are taking antipsychotic medication. But then we cannot be sure whether their performance reflects a genuine feature of the illness or an effect of the drugs!
- This makes the study of *schizoid* and *schizotypal personality disorder* (SPD or *schizotypy*) very important. The symptoms of schizophrenia can sometimes appear in a rather muted (toned-down) form. This gave rise to the idea of the *schizophrenic spectrum* (a range of schizophrenia-like disorders). SPD has received the most attention as a possible mild variant of schizophrenia. Diagnostic criteria for SPD include ideas of reference, odd beliefs or magical thinking, unusual perceptual experiences, odd thinking and speech, suspiciousness, inappropriate affect, odd eccentric behaviour or appearance, a lack of close friends and excessive social anxiety.

  If people high on schizotypy share important characteristics with schizophrenics, then by studying the former it becomes possible to study 'schizophrenia' without the confounding effects of acute mental disturbance or medication. This 'schizotypy strategy' is used to examine possible *mechanisms* involved in psychotic disorder. This includes the *genetics* of schizophrenia (see text below).

Is schizophrenia a brain disease?

Not only is schizophrenia one of the most serious forms of mental disorder but, as we saw in Chapter 43, it has become the focus for the whole controversy surrounding the medical model. Remember, Szasz distinguishes between neurological disorders and problems in living, leaving no room for 'mental illness'. So, is there evidence to suggest that schizophrenia is a neurological disorder?

When Kraepelin first identified *dementia praecox*, he was convinced that it was a physical disease like any other. The neuropathological changes associated with *general paralysis of the insane* (caused by syphilis) and *Alzheimer's disease* had just been discovered, and he expected that similar 'markers' would be found for schizophrenia and manic-depressive illness.

However, schizophrenia was categorised as a *functional psychosis* up until 1978 when, according to Gershon & Rieder (1992), the then new CT scan (see Chapter 4) was used for the first time to study the brains of chronic schizophrenics (by Johnstone *et al.* at the Clinical Research Centre in Middlesex, England). It revealed that chronic schizophrenics show an increase in the size of the lateral cerebral ventricles (the fluid-filled spaces in the middle of the brain), and other X-ray evidence confirmed that there was less brain tissue (especially in the medial temporal lobe). This was subsequently confirmed by MRI scans which, along with postmortem examinations, also revealed that schizophrenics have smaller hippocampi and part of their limbic system is also smaller. Gershon and Rieder also cite research which has shown reduced blood flow in the frontal cortex of schizophrenics, implying decreased neuronal activity. Postmortems also show that certain groups of neurons are organised in an abnormal way, or are connected differently, compared with non-schizophrenics.

An evaluation of the neurological disorder explanation

- All these differences are found when patients first develop symptoms (and may even precede the onset of symptoms), which suggests that they're not the result of being ill for a long time or of medication (Harrison, 1995). Also, they don't progress over time, nor is there any evidence of neural scar tissue (*gliosis*) that's normally found in degenerative disorders (such as Alzheimer's and Huntington's). This suggests a *neurodevelopmental* disorder, that is, a failure of brain tissue to develop normally, such as failure of neuronal growth or neuronal connections, or a disturbance in the 'pruning' of neurons that normally takes place between three and 15 years of age (Gershon & Rieder, 1992: see Chapters 4 and 37).
- However, the differences are apparent only if a group of schizophrenics is compared with a group of non-schizophrenics: no-one can yet diagnose schizophrenia in an individual based solely on a brain scan or looking down a microscope (Harrison, 1995). Even if this could be done, the more fundamental question as to why some people develop these disorders and others don't would remain unanswered. The cognitive and affective abnormalities involved in psychosis are so severe that it's reasonable to expect brain abnormalities to be involved (Frith & Cahill, 1995), but the data are largely *correlational*.

ASK YOURSELF...

- How do psychologists interested in individual differences try to separate the effects of variables (potential causes of those differences) that are correlated?
- How could these methods be applied here? (See Chapter 41.)

- Individual studies have regularly shown differences between schizophrenics and control samples. But replicable effects *across* studies have remained elusive (Claridge & Davis, 2003). For example, a review by Chua & McKenna (1995) concluded that there was no reliable evidence for gross structural or functional cerebral abnormality that could be said to characterise schizophrenia as a diagnostic category. The only exception was lateral ventricular enlargement; but the degree of enlargement is modest, many patients don't show any enlargement at all, and enlarged ventricles are found in other disorders (such as mania) (Davison & Neale, 2001). Also, enlarged ventricles are more of a vulnerability factor than an immediate cause of the disorder.
- It's more likely that different brain circuits underlie different clusters of symptoms. For example, people with known abnormalities in their temporal lobe often show schizophrenia-like symptoms. Neuroimaging studies involving schizophrenic patients support this link, and suggest that it's specifically *positive* symptoms that are associated with this dysfunction (Bogerts, 1997). *Negative* symptoms may be related to the *frontal* lobe. Schizophrenics show 'hypofrontality'. This is seen as either (a) reduced activity relative to other brain regions, or (b) failure of the prefrontal cortex (PFC) and associated structures to be appropriately activated by cognitive tasks (Velakoulis & Pantelis, 1996). Performance deficits on neuropsychological tests of frontal lobe function are much greater in those rated high on negative symptoms (Mattson *et al.*, 1997). This suggests that their core cognitive failure is *indirect,* due to *motivational* effects (see Table 44.3).

The biochemical theory of schizophrenia

According to the *dopamine hypothesis* (DH), the direct cause of schizophrenic symptoms is an *excess* of the neurotransmitter dopamine. The evidence for this hypothesis comes from three main sources:

- postmortems on schizophrenics show unusually high levels of dopamine, especially in the limbic system (Iversen, 1979)
- anti-schizophrenic drugs (such as chlorpromazine) are thought to work by binding to dopamine receptor sites, that is, they inhibit the ability of the dopamine (D2) receptors to respond to dopamine, thus reducing dopamine activity (see Chapter 45). These drugs produce side-effects similar to the symptoms of Parkinson's disease, which is known to be caused by low levels of dopamine in particular nerve tracts
- high doses of L-dopa (used in the treatment of Parkinson's disease) can sometimes produce symptoms very similar to the psychomotor disorders seen in certain types of schizophrenia. High doses of amphetamines induce *amphetamine psychosis* (AP), which closely resembles paranoid schizophrenia and can exacerbate the symptoms of a patient with schizophrenia (see Chapter 8). Both these drugs are believed to increase the activity of dopamine; dopamine-containing neurons are concentrated in the basal ganglia and frontal cortex, which are concerned with the initiation and control of movement. Degeneration of the dopamine system produces Parkinson's disease (see Chapter 4).

An evaluation of the DH

- Overall, the evidence is inconclusive (Lavender, 2000). For example, there's no consistent difference in dopamine levels between drug-free schizophrenics and normals, nor is there any evidence of higher levels of other metabolites indicating greater dopamine activity (Jackson, 1986). Even if such evidence did exist, this could just as easily be a *result* of schizophrenia as its

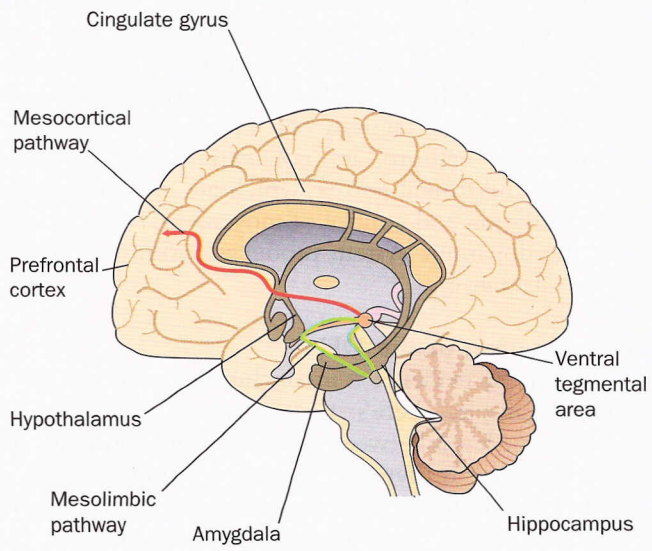
cause. Also, if dopamine were found to be a causative factor, this might only be *indirect* (for example, abnormal family circumstances give rise to high levels of dopamine which, in turn, trigger the symptoms (Lloyd *et al.*, 1984).

- It's unlikely that any problems with dopamine production/receptivity will prove to be the basic biochemical abnormality underlying all forms of schizophrenia – although it may play a crucial role in some forms (Jackson, 1990). According to Lavender (2000):

> ... if schizophrenia is not a clearly identifiable syndrome but an umbrella term covering a range of symptoms with unclear onset, course, and outcome, then it is obvious that much of the work investigating a specific biological basis will inevitably be inconclusive. So far, this appears to be the case.

As Bentall (1990) argues, perhaps the time has come to concentrate on specific symptoms, before trying to find the biochemical cause(s).

- The dopamine hypothesis cannot be a complete explanation For example, it takes several weeks for antipsychotics gradually to reduce positive symptoms, even though they begin blocking D2 receptors very quickly (Davis, 1978). Their eventual therapeutic effect may be due to the effect this blockade has on *other* brain areas and neurotransmitter systems (Cohen *et al.*, 1997).
- Antipsychotics seem to be effective in controlling positive symptoms, and where symptoms come on dramatically. But for patients whose symptoms appear gradually, and in whom negative or disorganised (cognitive) symptoms predominate, they're much less effective. The latter may stem from *reduced* dopamine levels in certain parts of the brain (such as the frontal lobes) and increased levels in others (such as the limbic system) (Javitt & Coyle, 2004).



The brain and schizophrenia

- Newer antischizophrenic drugs implicate *serotonin*. Serotoninergic neurons are known to regulate dopaminergic neurons in the *mesolimbic pathway* (MLP: see below and Figure 44.6). So, dopamine may be just one piece in a much more complex jigsaw (Davison & Neale, 2001; Javitt & Coyle, 2004).
- Focus has shifted recently to deficiencies in *glutamate*, a neurotransmitter found in almost every part of the human brain. It's known that *angel dust* (PCP, or phencyclidine) induces symptoms that resemble the full range of schizophrenic symptoms (see Chapter 8). At the molecular level, PCP impairs the function of the brain signalling systems that rely on glutamate, the brain's major *excitatory* neurotransmitter (see Chapter 4). More specifically, it blocks the action of a form of glutamate receptor called the NMDA receptor, which plays a crucial role in brain development, learning, memory and neural processing in general. It also plays a role in regulating dopamine. Blocking NMDA receptors produces the same disturbances of dopamine functioning as typically occur in schizophrenia. So, NMDA receptor dysfunction, by itself, can account for *both* negative and disorganised symptoms, and the dopamine abnormalities at the root of positive symptoms (Javitt & Coyle, 2004).
- Improved technologies for studying neurochemical factors in humans, plus inconsistent data, have led to the claim that what schizophrenics have is an excess of dopamine *receptors*, or that their D2 receptors are *oversensitive*. This refined DH is based on several postmortem and PET scan studies. Having too many – or oversensitive – receptors is functionally equivalent to having too much dopamine itself, and seems to be associated mainly with *positive* symptoms (Davison & Neale, 2001).
- An excess of dopamine located in the *mesolimbic pathway* (MLP) seems to be most relevant to understanding schizophrenia. The therapeutic effects of antipsychotic drugs on the positive symptoms occur by blocking D2 receptors there. The *mesocortical pathway* (MCP) begins in the same brain region as the MLP, but projects to the prefrontal cortex (PFC) (see Figure 44.6).

The genetic theory of schizophrenia

As Table 44.5 shows, relatives of patients with schizophrenia (proband or index cases) have a greater risk of being diagnosed themselves as the genetic relationship becomes closer. This was confirmed by Kendler *et al.* (1996).

As with intelligence (see Chapter 41), *family resemblance studies* confound genetic and environmental influences. In other words, there's no way of telling whether the correlation between the risk of developing schizophrenia and degree of family resemblance/blood tie is due to the greater genetic similarity or the greater

Table 44.5 Summary of major European family and twin studies of the genetics of schizophrenia (based on Gottesman *et al.*, 1987; Gottesman, 1991)

Relationship to proband	Percentage with schizophrenia
Spouse	1.00
First cousin	2.00
Grandchild	2.84
Niece/nephew	2.00–2.65
Child	9.35
– with one schizophrenic parent	6.00
– with two schizophrenic parents	46.00
Sibling	7.30–10.00
Dizygotic (DZ) twin	12.00–12.08
Monozygotic (MZ) twin	44.30
Monozygotic twin reared apart (MZA)	58.00

similarity of environments. The two major alternative designs, *twin and adoption studies,* both face problems of their own. (These were discussed in detail in Chapter 41, and the same issues apply here). In addition to all the *methodological* problems faced by twin and adoption methods, they presuppose that schizophrenia is a distinct syndrome which can be reliably diagnosed by different psychiatrists (but see Chapter 43).

Twin studies

ASK YOURSELF...

- What conclusions can you draw from Table 44.6?

As Table 44.6 shows, there's a wide variation in the concordance rate for schizophrenia in different studies, for both MZs and DZs, suggesting that different countries use different criteria for diagnosing schizophrenia (see Chapter 43). By the same token, if the highest concordance rate for MZs is 69 per cent, this still leaves plenty of scope for the role of environmental factors. If schizophrenia were totally genetically determined, then we'd expect to find 100 per cent concordance rate for MZs: if one member of an MZ pair has schizophrenia, the other twin should also have it in every single case. In fact, most diagnosed cases *don't* report a family history (Frith & Cahill, 1995).

Nevertheless, the average concordance rate for MZs is five times higher than that for DZs (50 per cent and 10 per cent, respectively: Shields, 1976, 1978). A more precise estimate for the relative importance of genetic and environmental factors comes from studies where MZs reared apart are compared with MZs reared together: according to Shields (1976, 1978), the concordance rates are quite similar for the two groups,

Table 44.6 Results of published schizophrenia twin studies (adapted from Joseph, 2003)

		Pairwise concordance rates					
		Identical twins			Same sex non-identical twins		
Author (year)	**Country**	**N**	**C**	**per cent**	**N**	**C**	**per cent**
Luxenburger (1928)	Germany	17	10	**59**	13	0	**0**
Rosanoff *et al.* (1934)	USA	41	25	**61**	53	7	**13**
Essen-Moller (1941/1970)	Sweden	7	2	**29**	24	2	**8**
Kallmann (1946)	USA	174	120	**69**	296	34	**11**
Slater (1953)	UK	41	28	**68**	61	11	**18**
Inouye (1961)	Japan	55	20	**36**	17	1	**6**
Tienari (1963/1975)	Finland	20	3	**15**	42	3	**7**
Gottesman and Shields (1966)	UK	24	10	**42**	33	3	**9**
Kringlen (1967)	Norway	45	12	**27**	69	3	**4**
NAS-NRC (1970/1983)	USA	164	130	**18**	268	9	**3**
Fischer (1973)	Denmark	25	9	**36**	45	8	**18**
Koskenvuo *et al.* (1984)	Finland	73	8	**11**	225	4	**2**
Onstad *et al.* (1991)	Norway	24	8	**33**	28	1	**4**
Franzek and Beckmann (1998)	Germany	9	6	**67**	12	2	**17**

N = number of twin pairs studied, C = number concordant

suggesting a major genetic contribution (but see Chapter 41).

Adoption studies

Adoption studies arguably provide the most unequivocal test of genetic influence, because they allow the clearest separation of genetic and environmental factors. They've largely replaced twin studies as the most frequently cited evidence in favour of the genetic theory of schizophrenia (Joseph, 2003).

Heston (1966) studied 47 adults born to schizophrenic mothers and separated from them within three days of birth (the 'adoptees method' (AM): Joseph, 2003). As children, they'd been reared in a variety of circumstances, though not by the mother's family. They were compared (average age 36) with controls who were matched for circumstances of upbringing, but where mothers hadn't been schizophrenic: five of the experimental group but none of the controls were diagnosed as schizophrenic.

Rosenthal *et al.* (1971) reported on a series of studies begun in 1965 in Denmark, which has national registers of psychiatric cases and adoptions. They confirmed Heston's findings, using children separated from schizophrenic mothers, on average at six months.

KEY STUDY 44.1 The Danish–American Adoptees' Family Study (Kety *et al.*, 1968, 1975)

- In a major adoption study of schizophrenia, Kety *et al.* used a different design from Heston and Rosenthal *et al.*
- Two groups of adoptees were identified, 33 of whom had schizophrenia and a matched group that didn't. Rates of disorder were compared in the biological and adoptive families of the two groups of adoptees (the 'adoptees' family method (AFM): Joseph, 2003).
- The rate was greater among the biological relatives of the schizophrenic adoptees than among those of the controls, a finding that supports the genetic hypothesis.
- Further, the rate of schizophrenia wasn't increased among couples that adopted the schizophrenic adoptees, suggesting that environmental factors weren't of crucial importance (Gelder *et al.*, 1989).

The reverse situation was studied by Wender *et al.* (1974), who found no increase among adoptees with normal biological parents but with a schizophrenic adoptive parent (the 'cross-fostering method' (CFM): Joseph, 2003). Gottesman & Shields (1976, 1982), reviewing adoption studies, conclude that they show a major role for heredity.

Conclusions: the nature and nurture of schizophrenia

- Perhaps the most reasonable conclusion is that there's converging evidence, from multiple sources, implicating genetic factors in the aetiology of schizophrenia. Its heritability seems to be comparable to that of any medical condition known to have a major genetic component, such as diabetes, hypertension, coronary artery disease, and breast cancer (Lilienfeld, 1995).
- However, the precise mode of inheritance remains controversial (Frith & Cahill, 1995; Lilienfeld, 1995). The most popular current view is the 'multifactorial' (*polygenic*) model: a number of genes are involved which determine a predisposition, which then requires environmental factors to trigger the symptoms of the illness. This is referred to as a *diathesis* (i.e. predisposition) –*stress model*.
- Zubin & Spring (1977), for example, claim that what we probably inherit is a degree of *vulnerability* to exhibiting schizophrenic symptoms. Whether or not we do depends on environmental stresses which may include viral infections during pregnancy (especially influenza A), severe malnourishment during pregnancy, birth injury or difficult birth, being born in winter, as well as 'critical life events' (see Chapter 38).
- According to Claridge & Davis (2003), individual studies have reported concordance rates for MZs ranging from zero to 90 per cent. Yet 50 per cent is often quoted. Claridge and Davis think this is suspicious:

> ... Is it possible that the value of 50 per cent now generally quoted is merely some average of a range of heritabilities for entirely different psychotic disorders, different varieties of schizophrenia, or just illnesses of different severity? ...

Heritabilities do vary in proportion to the judged severity among the cases sampled (Gottesman & Shields, 1982). More intriguing – and rather puzzling – is a finding relating to the *same* sets of twins diagnosed on two separate occasions: once according to FRSs, then again using broader criteria. On the broader criteria, the concordance rate for MZs was 50 per cent, but on FRSs, it was zero! (Farmer *et al.*, 1987; McGuffin *et al.*, 1987). According to Claridge & Davis (2003):

> ... This tends to suggest that, despite their convincingly 'psychotic' appearance, first rank symptoms do not tap directly into whatever is inherited in schizophrenia; instead they may indeed be secondary elaborations of some more fundamental (inherited) cognitive processes, along the lines visualized by Bleuler.

- According to Claridge & Davis (2003):

> ... the contribution of genetic influences is one of the few factual certainties about schizophrenia. Even in the absence of the discovery of specific genes, this is clear from kinship data ...

But, as the *diathesis–stress model* maintains, any inherited factors can account only for a greater vulnerability or likelihood of developing schizophrenia. They don't *guarantee* that the vulnerable individual will actually become

schizophrenic. So, just as Claridge and Davis are certain that genetic factors are involved, they're equally certain that the genetic data tell us that environmental factors must also be important. But these can be interpreted as *biological* factors (viral infections, birth complications and the like: see above) or as *social*. For example, Tienari (1991) examined the rate of schizophrenia in Finnish people who'd been adopted and whose biological mothers were schizophrenic. As predicted, having a biological mother with schizophrenia increased the rate of schizophrenia in the adoptees, even if they were adopted by non-schizophrenic families. But the schizophrenic gene revealed itself only if the adoptive family was psychologically disturbed in some way. So even vulnerable individuals could be protected from schizophrenia if their family of rearing was healthy.

- According to Joseph (2003), it's far easier to say that some people have a genetic predisposition than to create a society where children don't grow up in seriously disturbed families. As he says:

  > ... Genetic theories in psychiatry tend to blame the victim and let society off the hook, and in this way help support the status quo ... as ... Lewontin once observed, the question revolves around whether we see an individual as a problem for society, or society as a problem for the individual.

Laing and existential psychiatry

One group of British psychiatrists who most certainly didn't let society off the hook and saw society as a problem for the individual, were Laing, Cooper and Esterson, during the 1950s and 1960s. They were united in their rejection of the medical model of mental disorder. Like Szasz, they denied the existence of schizophrenia as a disease entity, and instead saw it as a metaphor for dealing with people whose behaviour and experience fail to conform to the dominant model of social reality. They thus spearheaded the *antipsychiatry movement* (Graham, 1986).



R.D. Laing (1927–1989)

Heather (1976) identifies three major landmarks in the development of Laing's thought, corresponding to the publication of three major books.

- In *The Divided Self* (1959), Laing tried to make sense of schizophrenia by 'getting inside the head' of a schizophrenic, trying to see the world as the schizophrenic sees it (the *psychoanalytic model*). This *existentialist analysis* retained the categories of classic psychiatry, but proceeded from the assumption that what the schizophrenic says and does are intelligible if you listen carefully enough. Laing found a split in the schizophrenic's relationship with the world and with the self: s/he experiences an intense form of *ontological insecurity,* making everyday events a threat to his/her very existence.
- In *Self and Others* (1961), Laing proposed the *family interaction model.* Schizophrenia can only be understood as something which takes place *between* people (*not* inside them). To understand individuals, we must study not individuals but interactions between individuals, and this is the subject matter of *social phenomenology* (see Chapter 22).

The family interaction model was consistent with research in America, especially that of Bateson *et al.* (1956), which showed that schizophrenia arises within families which use 'pathological' forms of communication, in particular contradictory messages (*double-binds*). For example, a mother induces her son to give her a hug, but when he does she tells him 'not to be such a baby'. Laing & Esterson (1964) presented eleven family case histories (in all of which one member becomes a diagnosed schizophrenic), in order to make schizophrenia intelligible in the context of what happens within the patient's family and, in so doing, to undermine further the disease model of schizophrenia.

- In *The Politics of Experience* (1967), two new models were presented. The *conspiratorial model* maintains that schizophrenia is a label, a form of violence perpetrated by some people on others. The family, GP, and psychiatrists conspire against schizophrenics in order to preserve their definition of reality (the status quo). They treat schizophrenics as if they were sick, imprisoning them in mental hospitals, where they're degraded and invalidated as human beings.

According to the *psychedelic model,* the schizophrenic is an exceptionally eloquent critic of society, and schizophrenia is 'itself a natural way of healing our own appalling state of alienation called normality'. Schizophrenia is seen as a voyage into 'inner space', a 'natural healing process'. Unfortunately, the 'natural sequence' of schizophrenia is very rarely allowed to occur because, says Laing, we're too busy treating the patient.

In the past 30 years, eating disorders (EDs) have become widespread in western industrialised societies. This may be related to the overabundance of food, but it's likely to be influenced by societal norms that link attractiveness to being thin (APA, 1994). Indeed, the popular and scientific assumption is that the preoccupation with thinness and dieting rampant in western societies is a direct cause of eating disorders. However, according to Fedoroff & McFarlane (1998):

> ... it is well established that eating disorders are multidetermined and that culture is only one of many factors that contribute to the development of eating disorders ...

Furthermore:

> ... cultural factors can only be understood as they interact with the psychology and biology of the vulnerable individual ... a culture cannot cause a disorder ...

According to the *dimensional* view, the full-blown ED is the end-point along a continuum that begins with normal dieting, advances to excessive concern about weight and the emergence of some clinical symptoms, and finally a severe, pathological illness. In recent years, this viewpoint has become more popular – even in mainstream psychiatry. So, it's widely agreed that the EDs are most appropriately regarded as a 'spectrum of pathology', rather than discrete disease entities. Although we continue to use DSM diagnostic criteria and terminology for convenience, in practice assessment typically reflects the dimensional view, and patients with milder forms are treated alongside more serious cases (Claridge & Davis, 2003).

Anorexia nervosa

Anorexia nervosa (AN) (literally, 'nervous lack of appetite') usually begins in adolescence (16–17) after the patient (90–95 per cent of whom are female) has become over-concerned about 'puppy fat' and has begun to diet. This dieting often masquerades as 'vegetarianism' (Lipsedge, 1997b) and progresses to a relentless attempt to achieve what is in fact an abnormally low body weight. AN affects 0.5–1 per cent of adolescent and young adult women (Claridge & Davis, 2003). Up to one third also describe episodes of uncontrollable overeating (binge-eating/bulimia nervosa: see below). There's also evidence of an increase in cases of AN among males (Seligmann *et al.*, 1994). Where the age of onset is 8–14, about 25 per cent are boys (Frude, 1998).

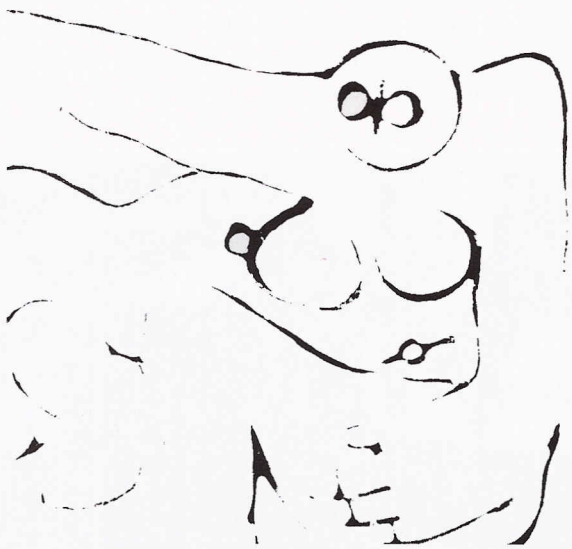
Box 44.9 DSM-IV-TR criteria for anorexia nervosa

- Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g. weight loss leading to maintenance of body weight less than 85 per cent of that expected; or failure to make expected weight gain during periods of growth, leading to body weight less than 85 per cent of that expected).
- Intense fear of gaining weight or becoming fat, even though underweight.
- Disturbance in the way in which one's body weight or shape is experienced, undue influence of body shape and weight on self-evaluation, or denial of the seriousness of current low body weight.
- In post-menarchal females, amenorrhoea, i.e. the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhoea if her periods occur only following hormone, e.g. oestrogen administration.)

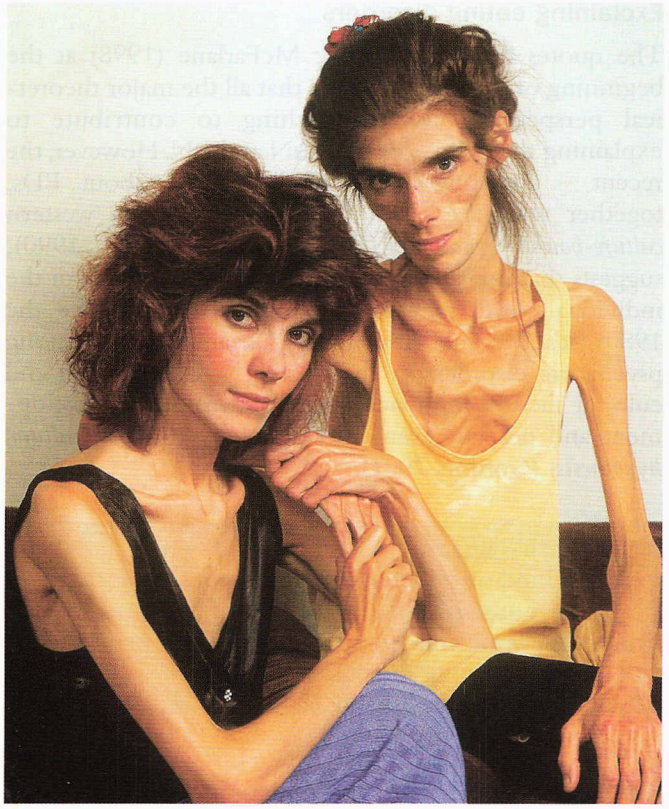
Specific types

- *Restricting type*: During the episode of anorexia nervosa, the person does not regularly engage in binge eating or purging behaviour (i.e. self-induced vomiting or the misuse of laxatives or diuretics).
- *Binge eating/purging type*: During the episode of anorexia nervosa, the person regularly engages in binge eating or purging behaviour (i.e. self-induced vomiting or the misuse of laxatives or diuretics).

The restricting type is what we most commonly associate with AN. Both the quantitative and qualitative value of food eaten is systematically reduced over time, producing an escalating state of malnutrition and loss of energy. But, as Claridge & Davis (2003) observe, the binge eating/purging type sounds more like bulimia nervosa (BN) than it does the restricting type of AN. So, the DSM classification seems quite arbitrary, and some researchers have questioned whether these really are separate disorders



An anorexic patient's painting of how she sees herself at 'normal' weight – obese, ugly and resentful (from Crisp, 1980)



The much publicised English anorectic twins, Samantha and Michaela Kendall. Despite receiving treatment in the USA, Samantha eventually died. Michaela died three years later

(Mitchell & McCarthy, 2000). The only real difference between restricting type AN and BN is the patient's *body weight* (the latter's is either within normal limits or actually *over*). DSM has chosen to use body weight (in practice, *body mass index,* or BMI) as the unifying characteristic for the AN subtypes, instead of classifying EDs according to their *psychobehavioural* similarities.

Menstrual status is probably the most useful marker of the distinction between AN restricting type and BN. *Amenorrhoea* often occurs early in the development of the disorder, *preceding* any obvious weight loss in about 20 per cent of cases, Depression, lability of mood, social withdrawal and lack of sexual interest are all common. Some patients have signs that are secondary to the low food intake, including constipation, low blood pressure, bradycardia (slow heart rate), sensitivity to cold and hypothermia (Gelder *et al.*, 1999). Those whose dieting progresses to AN (the vast *minority*) are more likely to have low self-esteem, and prevalence is increased among groups for whom weight and physical appearance are particularly relevant, such as ballet students and models (see Critical Discussion 44.6, page 803).

AN has the highest mortality rate of *any* psychiatric disorder (including depression and alcoholism). According to the Eating Disorders Association (EDA), mortality is 13–20 per cent (Waterhouse & Mayes, 2000), death arising from both the effects of starvation and suicide.

Among those with improved weight and menstrual function, some continue to have abnormal eating habits, some become overweight, and some develop BN. The most useful predictor of poor outcome is a long history of AN at the time when the patient is first seen by a doctor (Gelder *et al.*, 1999).

Bulimia nervosa

While AN has been recognised in Europe and the USA since the 1870s, *bulimia nervosa* (BN) (from *bous* meaning 'ox' and *limos* meaning 'hunger') was virtually unknown before the 1970s. By the 1980s, however, it was widely agreed that BN was considerably more common than AN (Gordon, 2001).

BN sufferers tend to be older, less likely to come from middle- or upper-class backgrounds, more likely to have been overweight in the past and engage in self-destructive or antisocial, impulsive behaviours (such as shoplifting, drug abuse or deliberate self-harm). According to Russell (1979), BN is more intractable to treat, and patients have a poorer prognosis. It affects 2–3 per cent of adolescent and young adult women (Claridge & Davis, 2003).

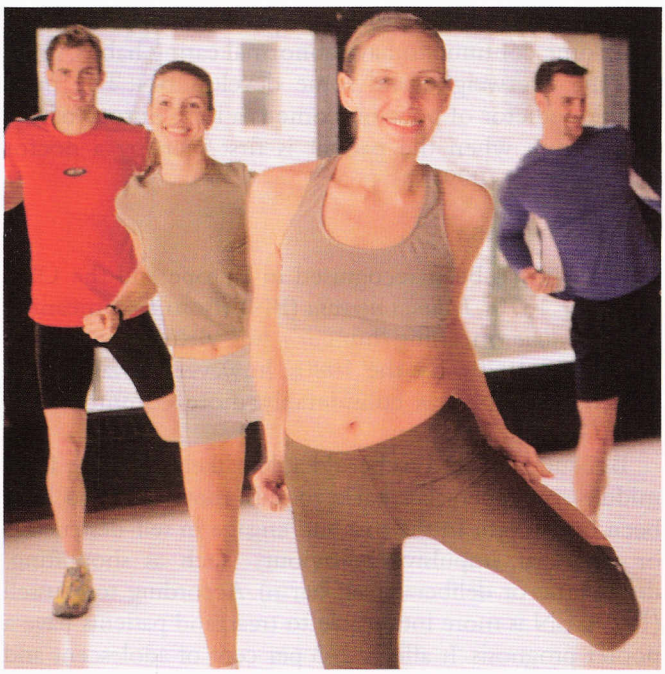
Box 44.10 DSM-IV-TR criteria for bulimia nervosa

- Recurrent episodes of binge eating. An episode of binge eating is characterised by both (a) eating in a discrete period of time (e.g. in any two-hour period) an amount of food that is definitely larger than most people would eat in a similar period of time (taking into account time since last meal and social context in which eating occurred); and (b) a sense of lack of control over eating during the episodes (e.g. feeling that one can't stop eating or control what or how much one is eating).
- Recurrent use of inappropriate compensatory behaviour to avoid weight gain, e.g. self-induced vomiting.
- A minimum average of two episodes of binge eating and two inappropriate compensatory behaviours a week for at least three months.
- Self-evaluation is unduly influenced by body shape and weight.
- The disturbance does not occur exclusively during episodes of anorexia nervosa.

Specific types

- *Purging type*: These individuals regularly purge after binge eating via self-induced vomiting or abuse of laxatives.
- *Non-purging type*: These individuals do not engage in self-induced vomiting or laxative abuse. Some may use compensatory methods of dieting and exercising.

Depression is common (mainly secondary to the ED), and there's considerable lability of mood. It's not uncommon for sufferers to contemplate suicide after binging, or to actually attempt suicide. While denial is a common feature of AN, BN sufferers are usually well



Regular exercise can be a way of concealing an eating disorder through a socially highly valued activity

aware that they have a serious problem and require help (Mitchell & McCarthy, 2000). However, the non-purging type is more likely to follow a binge with periods of fasting or excessive physical activity. This probably represents the most secretive and difficult to recognise type, since exercise is so highly valued in western society. Because of all the known benefits of regular exercise (see Chapter 12), the exercising bulimic is likely to be seen by even close friends and family as the picture of health. By contrast, the anorectic who exercises obsessively will be conspicuous because of her emaciated appearance (Claridge & Davis, 2003). Unlike anorectics, bulimics don't 'look' bulimic.

Episodes of bulimia may be precipitated by stressful events, the breaking of self-imposed dietary rules, or they may be planned. It's the extreme lack of control over eating that distinguishes BN from AN. The binge initially provides pleasurable relief from the urge to eat and other kinds of tension. But this is soon followed by guilt and disgust. Repeated vomiting causes potassium depletion, which induces weakness, cardiac arrythmia (irregular heart rhythms), and renal damage. Urinary infections and epileptic seizures may also occur (Gelder *et al.*, 1999). Tooth enamel becomes eroded by the gastric acid brought up by vomiting.

ASK YOURSELF...

- Based on these criteria for diagnosing AN and BN, do you think they represent exaggerations of 'normal' eating/dieting behaviours, or are they qualitatively different?

Explaining eating disorders

The quotes from Fedoroff & McFarlane (1998) at the beginning of this section imply that all the major theoretical perspectives have something to contribute to explaining the origins of both AN and BN. However, the recent – and ongoing – public debate about EDs, together with the claim that they may be a western *culture-bound syndrome* (CBS) (e.g. DiNicola, 1990), suggests that explanations at the cultural (rather than the individual) level may be the place to start. Since the 1980s, it's become clear that EDs are unique among psychiatric disorders in the degree to which social and cultural factors influence their epidemiology, development and perhaps even their aetiology (the *sociocultural hypothesis*) (Gordon, 2001).

ASK YOURSELF...

- What kind of evidence would support the sociocultural hypothesis?
- What specific cultural factors would you expect to be particularly influential?

Are EDs universal? Are the causes universal?

While many studies have found evidence of common symptomatology as described by DSM and ICD in non-western societies, others have proposed that some symptoms don't appear in some non-western cultures. For example, an intense fear of fatness and body image disturbance aren't typical of AN patients in Hong Kong and India, and their reasons for refusing food are more likely to be linked to somatic symptoms, such as abdominal bloating and fullness. They're also much less likely to display bulimic symptoms. In non-western countries, weight loss is often achieved purely by dietary restriction, rather than purging behaviours (Federoff & McFarlane, 1998). Although 'fat concern' has become a collective experience in the modern world (western and non-western), the *experience* of people with AN is extremely diverse (Lee, 2001).

Although emaciation, food refusal, and amenorrhoea are universal symptoms of AN, it's important to evaluate symptoms in their cultural context. For example, is fasting a culturally sanctioned expression of religious piety (as in Middle Eastern countries), or is it a symptom of an underlying disorder? All the screening and diagnostic instruments have been developed in Europe and North America, and are based directly on western concepts of abnormal eating. Consequently, patients who don't fit the model, but who may well be showing cultural diversity in the expression of a psychiatric disorder, will be ignored (Kleinman, 1987). Similarly, Lee (2001) argues that when the DSM approach is applied to AN, fat phobia becomes the 'core' symptom. This means that:

... patients who do not fit into this constructed (and constricted) template are conveniently discarded as unreal, atypical or simply dishonest deniers ...

This makes the detection of reliable cross-cultural differences very difficult.

Subcultural differences

According to Federoff & McFarlane (1998), the majority of the evidence from surveys and clinical reports indicates that the prevalence of AN and BN in non-white groups is lower than among whites. An interesting exception to this consistent finding is described in Key Study 44.2.

KEY STUDY 44.2 BN among Asian and non-Asian girls in England (Mumford & Whitehouse, 1988; Mumford *et al.*, 1991)

- Mumford and colleagues compared 204 Asian and 355 white schoolgirls in the north of England.
- Those whose self-report measures indicated a possible eating disorder were interviewed. A total of 3.4 per cent of the Asian girls and 0.8 per cent of the white girls met the DSM-III-R (1987) criteria for BN.
- Contrary to expectations, Asian girls from traditional families were *more* likely to develop an ED than those from more westernised families. The researchers suggest that the tensions of living in a traditional Asian family within a western culture might be responsible.

The conflict faced by these girls from traditional Asian families is mirrored, on a far greater scale, by women in general, and women living in countries undergoing major social and political change in particular.

CRITICAL DISCUSSION 44.5 EDs and women's identity

- The incidence of EDs appeared to rise sharply in the USA and UK, and many European countries, during the mid-to-late 1960s, then in accelerating fashion into the 1970s and through the late 1980s. Some have described this as a modern epidemic, which has coincided with a number of sweeping changes in western societies during that period (Gordon, 2001). More specifically:

  ... because eating disorders affect mainly females and revolve around issues of identity and body image, it is not surprising that observers have linked the rise of eating disorders in the West with the crises of female identity and the forces impinging on women that followed the cultural upheavals of the 1960s ... (Gordon, 2001)

- According to Wolf (1991):

  ... As women have moved in increasing numbers into the spheres of education and work around the globe, expectations for achievement and performance have sometimes conflicted sharply with insistent demands for traditional postures of dependency and submissiveness ...

  These contradictory pressures have produced an increased sense of personal uncertainly, self-doubt and powerlessness. The thin body ideal de-emphasises traditional 'feminine' curvaceousness in a society still riddled with sexist stereotypes that associate 'curves' with low intelligence (Silverstein & Perlick, 1995).
- All the evidence suggests that EDs are no longer unique to western societies. For example, Mumford *et al.* (1992) found that English-speaking girls in Lahore, Pakistan, showed similar rates of BN to white schoolgirls in England. Significantly, the Pakistani girls lived in an area where there were many advertisements for slimming clinics and 'keep fit' clubs. They were also from upper social classes, and were more likely to have adopted western lifestyles and values.
- Crucially, there are contradictory pressures that emerge when women begin to have access on a mass scale to education and a more equal role in public life. This may be especially problematic in societies where the transition to a new female role is particularly sudden and conflicts sharply with traditional forces that demand deference to one's family and submissiveness to men (Gordon, 2001).
- In post-apartheid South Africa, the evolving emancipation of women is part of profound changes in the sociocultural environment in general (Szabo & le Grange, 2001):

  ... If the central dynamic of an eating disorder is an identity struggle, then this struggle could be defined as a desire to become more 'western' while at the same time embracing a new found pride in being African, that is, to take pride in one's African culture, psychologically, and literally ...

  The conflict over gender roles may no longer be an exclusive issue for western women (Nasser, 1997), and EDs may be one way in which this search for identity in black South African women is expressed (Szabo & le Grange, 2001).

CRITICAL DISCUSSION 44.6 Can you catch anorexia from *Vogue* magazine?

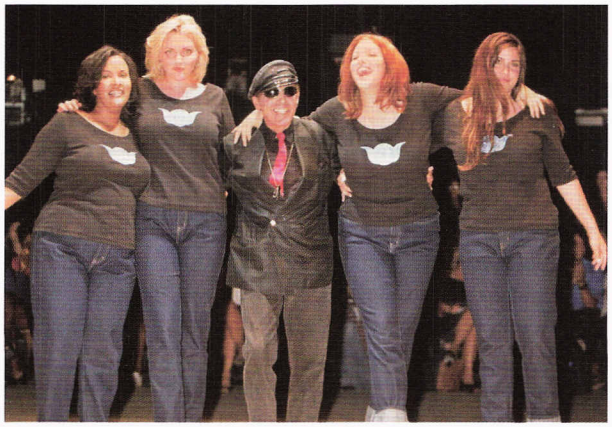
- In June 2000, the British government held a 'super-waif summit' to debate the causes of eating disorders. In prosperous western societies, where food is abundant, thinness is a status symbol for women. Slimmer physiques reflect upward social mobility, and fat is generally degraded and stigmatised.
- Taking *Playboy* centrefolds and Miss America contestants as representing the western ideal of feminine beauty, Garner *et al.* (1980) found that ideal shape became progressively slimmer from 1959 to 1978. But at the same time, the actual weight and size of the female

population has been *increasing;* this merely adds to the pressure on women to lose weight. This obsession with thinness is so widespread that a moderate degree of body dissatisfaction is now normative among western women (Rodin *et al.*, 1985).



Is the fashion industry contributing to the increased incidence of eating disorders?

- It's widely believed that the female preference for thinness is influenced by its glorification and glamorisation by the media, especially perhaps in women's magazines such as *Vogue*. A recent report by the British Medical Association claims that media images have a major impact on women's perceptions of their bodies, and calls for more 'Sophie Dahls than Kate Mosses' (*Nursing Times,* 2000).
- Interestingly, June 2000's *Marie Claire* published two different covers, one showing a thin Pamela Anderson, the other a curvaceous Sophie Dahl. 65 per cent of readers bought the Dahl cover. It appears that sales of Barbie (in real terms 5 ft 8 in tall and a size 8) are falling, and the supermarket chain Tesco approached Mattel, Barbie's manufacturer, to produce her in a size 14/16 (Robinson, 2000).



Francesco Scavullo and the V girls. Sophie Dahl (second from left) and her fuller-figure colleagues demonstrate that thinness isn't the only ideal/desirable body shape

According to Lee (1993), Chinese in Hong Kong are changing from a traditional low-fat, high-fibre diet to a more westernised, fast-food diet. Obesity is becoming more commonplace among adolescents (see below), as are advertisements for weight-loss clinics and fitness clubs. The incidence of AN and BN is increasing in Japan as the influence of American culture on Japanese society becomes greater (Federoff & McFarlane, 1998).

If fast food is a characteristic of western culture, so is the preferred or 'ideal' appearance of women.

Obesity: the forgotten ED

As serious a problem as AN and BN are, the EDA regards *obesity* as the number one ED among young girls – and the population as a whole. According to figures for 1998, 17 per cent of British men and 21 per cent of women are clinically obese (Waterhouse & Mayes, 2000). According to DSM, obesity isn't an ED.

Overweight and obesity are highly stigmatised, especially for women. This causes an acute tension between the drive for thinness, on the one hand, and the forces that encourage weight gain in the general population, on the other. Gordon (2001) sees this contradiction as centrally involved in the increase in AN and BN. Similarly, Moghaddam (2002) argues that the ideal of thinness conflicts with two other trends: (a) more people now have access to more food; and (b) the mass media are trying to persuade people to consume more:

> To grow up in a western society is to learn to want to control one's weight. Central to this desire for weight control is an ambivalence toward food. On the one hand, food is relatively cheap and easily available, and there is an enormous focus on the joys of cooking and eating. But on the other hand, food has become 'dangerous' and 'public enemy number one'. Food is associated with poor health and even death.

Likewise, Orbach (2004) claims we are, as a culture, confused about eating. For many, food is neither pleasure nor fuel, but something to be watchful, wary and even afraid of.

Vulnerability: the role of individual differences

As powerful as cultural influences are, they cannot tell the whole story. Despite the fact that most women are exposed to pervasive media messages about attractiveness and thinness, the population incidence and prevalence of EDs are relatively low. As Claridge & Davis (2003) put it:

> ... If our glorification of the slender female body was the *principal* cause of eating disorders, we should find a far higher prevalence ... than we do. Whether media images of thinness play a *causal* role, or merely reflect wider cultural standards, is controversial, but it's unlikely that the relationship between the increasing demand for thinness and the rise of EDs is coincidental (Gordon, 2001) ...

According to Freeman (2000), who was hospitalised for four years with AN as a teenager, the media *aren't* the cause of eating disorders. But the current culture of skinniness legitimises the anorectic's belief that she's too fat. Similarly, Claridge and Davis argue that cultural factors 'set the stage', provide the backdrop, heighten awareness and create, for many, the initial motive for dieting:

> ... the power and pervasiveness of advertising are primarily responsible for the normative discontent that many young women – and more recently men – feel about their physical appearance, and for the extraordinary methods they will use to improve their body image. The diet and fitness industries are dual conspirators in this process, and continue to make a fortune from the insecurities and dissatisfaction they have fostered in our society.

However, there's been a recent shift away from explanations of EDs that rely solely on sociocultural factors to those that include a consideration of *individual* factors, including neurophysiological and genetic. A complementary approach is to regard only individuals that are *vulnerable* to these cultural pressures as likely to develop symptoms. Vulnerability may arise through pre-existing anxiety, depression, low self-esteem in childhood and history of weight preoccupation (Bulik, 2001). Other risk factors include *obsessionality*. Perhaps the most consistently reported association is between EDs (especially AN) and OCD (see above).

ASK YOURSELF...

- Can you see any parallels between the vulnerability explanation of EDs and a particular explanation of schizophrenia (see above, page 798)?

We could regard vulnerability as a *diathesis* (a predisposition to develop an ED), with cultural pressures towards thinness (and the ambivalence towards food) providing the 'trigger' (*stress*). As with schizophrenia, the stress on its own isn't sufficient to induce symptoms (otherwise, everyone would have it), but some individuals within the same culture are more likely than others to develop the disorder. Sociocultural factors tell part of the causal story – but not the whole story.

CHAPTER SUMMARY

- While **fear** evolved as an adaptive mechanism, **anxiety** often occurs in the absence of any external threat.
- A **phobia** is an extreme, irrational fear. Most common is **agoraphobia**, followed by **social phobias** and **specific phobias**. **Preparedness** may help explain why some phobias are more easily acquired than others.
- **Obsessions** are recurrent, intrusive thoughts and feelings, often accompanied by **compulsions**, which are repetitive, ritualised behaviours. Their function is to prevent a dreaded event and reduce distress.
- Skinner's **superstition hypothesis** tries to explain how **obsessive-compulsive disorder** (OCD) develops, but is more successful at explaining how it's **maintained**.
- The **pre-frontal cortex** (PFC), **basal ganglia** and **limbic system** are implicated in many **neurobiological/neuropathological** explanations of OCD.
- According to the **serotonin hypothesis** (SH), OCD is caused by abnormally low levels of brain serotonin. Part of the evidence for the SH comes from the successful use of SRI drugs with OCD patients.
- Other, more **cognitive** explanations include Rachman's **thought–action fusion** (TAF) interpretation. TAF represents a form of **psychological vulnerability**, which increases the chances of **misinterpretation**.
- **Body dysmorphic disorder** (BDD) has much in common with OCD. Intrusive thoughts focus on a particular party of the body which the patient finds defective, and compulsion-like behaviours commonly also occur.
- Symptoms of **post-traumatic stress disorder** (PTSD) include both defensive **avoidance/repression** and **flashbacks**.
- PTSD can be seen as a breakdown of the normal stress response. Excessive production of **endorphins** may explain the numbness, and **adrenaline** and **noradrenaline** are thought to destroy cells in the **hippocampus**.
- **Mood** (**affective**) **disorders** can be **bipolar** or **unipolar**. The traditional distinction between **endogenous/psychotic** and **reactive/neurotic depression** is controversial, and causation is no longer implied when a diagnosis of clinical depression is made.
- The higher rate of depression among women is more likely to be due to **non-biological** than hormonal factors. Cultural factors are important in both the expression and diagnosis of depression.
- The major **neurochemical explanation** of depression (the **monoamine hypothesis**/MAOH) is based on the mechanisms of **tricyclics**, **monoamine oxidase inhibitors** (MAOIs) and **specific serotonin reuptake inhibitors** (SSRIs).
- **Learned helplessness theory** (LHT) is the original of three **cognitive** explanations of depression. The realisation that there's more to depression than LH led to LHT's revision in terms of **attribution theory principles**. This, in turn, was modified as **hopelessness theory** (HT).
- **Schizophrenia** is one of the most serious of all mental disorders. Schneider's **first-rank symptoms** (FRSs) are **subjective experiences**, while Slater and Roth's four additional symptoms are **directly observable** from the patient's behaviour.

- An important distinction is made between **positive** (Type I) **symptoms** (the **presence of active symptomatology**), **negative** (Type II) **symptoms** (**lack/poverty of behaviour**) and **disorganised** (or **cognitive**) **symptoms**.
- DSM distinguishes between **disorganised**, **catatonic** and **paranoid** schizophrenia. Other types that have been identified include **simple** and **undifferentiated** (**atypical**).
- Differences between the **brains** of schizophrenics and non-schizophrenics aren't sufficient on their own to allow diagnosis, and evidence for the **dopamine hypothesis** (DH) is inconclusive.
- Considerable evidence from **twin** and **adoption studies** supports the **genetic theory of schizophrenia**; but these are methodologically questionable.
- According to the **diathesis–stress model**, inherited factors can only increase the likelihood that **vulnerable** individuals will become schizophrenic. **Environmental factors** are needed to trigger the symptoms.
- **Anorexia nervosa** (AN) and **bulimia nervosa** (BN) have many symptoms in common. But bulimics are usually of normal weight, are older, are less likely to come from middle-/upper-class backgrounds, and more likely to engage in self-destructive or antisocial behaviours.
- AN and BN are occurring more frequently in developing cultures as they become more industrialised/westernised, which includes changes in diet and attitudes towards desirable physical appearance.
- Eating disorders (EDs) are now far too global to be considered western **culture-bound syndromes** (CBSs), and **obesity** is arguably a greater problem than either AN or BN (though it's not recognised as an ED by DSM).
- EDs may partially be the result of the **ambivalence** towards food in western societies. The **thinness ideal** conflicts with the availability of food, and the promotion of cooking and general consumption of food.
- While there's much support for the **sociocultural hypothesis**, other individual factors are needed to provide a complete account. These may include pre-existing anxiety, depression, low self-esteem and obsessionality.

Links with other topics/chapters

- Fear, as distinct from anxiety, is considered to be adaptive, because it increases *alertness* and *vigilance* (Chapter 7).
- If phobias are maintained through the negative reinforcement produced by avoidance, then it's logical for *behaviour therapy* to force the phobic person to confront the object of their phobia (Chapter 45).
- According to Freud, obsessions are *defensive psychological responses* (that develop during the anal-sadistic stage: Chapter 35) that serve to occupy the mind and *displace* more threatening thoughts. Laughlin (1967), for example, sees the intrusion of obsessive thoughts as preventing the arousal of anxiety, by acting as a more tolerable substitute for a subjectively less acceptable thought or impulse. But it's hard to see what obsessive thoughts of, say, killing someone are a more tolerant substitute for (Chapters 42 and 45).
- Seeing the positives in PTSD, and advocating the expansion of psychology into a science of optimal human functioning, relate to the *aims of psychology as a science*. It also demonstrates that psychology cannot be *value-free* (Chapters 3 and 47).
- In addition to all the traditional roles women have played, as they move into their forties and fifties, they're increasingly having to care for ageing parents and experience the 'full-nest' syndrome (Chapter 38).
- Learned helplessness and the related concept of *control* are relevant to understanding the effects of *stressors* and people's ways of *coping with stress* (Chapter 12).
- Regarding the symptoms – and the whole experience – of depression as universal and culture-free is a form of *ethnocentrism* (Chapter 47).
- The schizophrenic spectrum has its counterpart in the *autistic spectrum* (Chapter 40).
- The validity of twin studies rests upon the *equal environment assumption* (EEA) (Chapter 41).
- Women's *identity* is an issue that arises both in *adolescence* (Chapter 37) and *adulthood* (Chapter 38).
- It's no coincidence that *early adolescence* is currently the most common age for the onset of EDs, especially AN. Also, the age of onset has been decreasing over recent years (it's not atypical to see patients as young as eight: Claridge & Davis, 2003) (Chapter 37).

Classifying treatments and therapies
- The relationship between theory and therapy
- Dimensions along which treatments can be placed
- What is psychotherapy?

Biological (somatic) therapies
- Chemotherapy
- Electroconvulsive therapy
- Psychosurgery

Psychoanalysis and other psychodynamic approaches
- Freud's model of psychological disorder
- The aims of psychoanalysis
- Therapeutic techniques
- Psychodynamic psychotherapy

Behavioural approaches
- Models of psychological disorder
- Behaviour therapy
- Behaviour modification

Cognitive–behaviour therapy
- Model of psychological disorder
- Rational emotive therapy (RET) (Ellis, 1962, 1973)
- Self-instructional training (S-IT) (Meichenbaum, 1977)
- Treatment of 'automatic thoughts' (Beck, 1963, 1967, 1987)
  - *An evaluation of Beck's approach*

Client-centred therapy (CCT) (Rogers, 1959)
- Model of psychological disorder
- The aims of therapy
- The therapeutic process

An evaluation of therapy: is it effective?
- Outcome research
- Process research

Conclusions

Chapter summary

Links with other topics/chapters

45

TREATMENTS AND THERAPIES



INTRODUCTION AND OVERVIEW

As Chapters 43 and 44 have shown, the study of psychological abnormality involves a convergence of psychiatry (a branch of medicine) and abnormal psychology, the latter defined as the scientific study of the causes of abnormal behaviour/mental disorders. In this chapter, the focus is on the *application* of what we know about abnormality in an attempt to help people with psychological problems. The two professional branches of the discipline of psychology whose goals are the maintenance and generation of mental health are *clinical psychology* and (the more recent) *counselling psychology* (Powell, 1995).

Both clinical and counselling psychology draw on the same research findings and range of theoretical approaches that have recurred throughout this book. They also both adopt the *scientist–practitioner model* of helping: the professional helper is guided by, and operates within the framework of, general scientific methods when assessing alternative treatments/therapies (Dallos & Cullen, 1990: see Chapter 3).

While clinical psychologists have traditionally been more influenced by *behavioural approaches* (based on classical and operant conditioning), counselling psychologists (as well as trained counsellors, who may not be psychologists) have been more influenced by the *humanistic approach*. A third, overlapping, professional group are psychotherapists; their methods reflect (to varying degrees) the influence of Freud's *psychoanalysis*.

CLASSIFYING TREATMENTS AND THERAPIES

The relationship between theory and therapy

Where theory has grown out of clinical practice (that is, work with psychiatric patients), theory and therapy are intimately connected (as in Freud's psychoanalysis, and Rogers' client-centred therapy). But behavioural therapies aren't always derived directly from learning theory, which is sometimes unable to account for therapeutic outcomes and certain aspects of abnormal behaviour. Some forms of therapy aren't directly related to any particular theory (e.g. psychodrama and transactional analysis) and, in practice, treatment is often *eclectic,* that is, it combines different techniques from different approaches.

Dimensions along which treatments can be placed

- What most *psychological treatments* have in common is a rejection of the *medical model* (see Chapters 43 and 44). For example, although Freud distinguished between 'symptoms' and 'underlying pathology', the latter is conceived in psychological terms (not genetic or biochemical), and he was concerned with the individual and not the 'disorder'. Although he used diagnostic labels, he did so for linguistic convenience rather than as an integral part of his theories. He focused on understanding his patients' problems in their life context, rather than on clinical labelling (Mackay, 1975).
- One aspect of 'technique' which is profoundly important in the therapeutic relationship is whether or not the therapist makes suggestions and gives advice to the patient (or client). In *directive therapies,* concrete suggestions are made and clients are often instructed to do certain things (such as 'homework' in between sessions, or specific exercises under the therapist's supervision). For example, *behaviour therapy* concentrates directly upon changing people's behaviour (and any desired changes in thoughts and feelings will 'look after themselves'). By contrast, *cognitive–behaviour therapy* (CBT) is aimed directly at thoughts and feelings: clients are instructed to talk to themselves in different ways, to give themselves instructions for behaviour, to write down their distressing and negative thought patterns, and so on.
- *Non-directive therapies* concentrate on making sense of what's going on in the relationship between therapist and client, and on understanding the meanings of the client's experiences (as in *psychoanalysis* and *client-centred therapy*). These are more difficult to describe than directive therapies, because the therapist plays a more passive role:

> ... listen[ing] and tak[ing] part with the client in exploring and experiencing what is going on between them ... (Oatley, 1984)

- *Individual therapies* are conducted between a therapist and a client (one-to-one, face-to-face), and are by far the most popular form of therapy (Feltham, 2000). Most of the major approaches described in this chapter are individual, but some less well-known therapies are, by definition, *group* therapies (see Box 45.1).
- A major development in psychotherapy in the late 1970s and early 1980s was the emergence of *family therapies* and *marital/couple therapy,* reflecting the growing awareness by therapists of the important role played by the client's relationships in the development and maintenance of their problems (Dryden, 1984). Generally, where the problem is seen as interpersonal, family, marital/couple or group therapy is likely to be recommended. But where the problem is seen as 'residing' within the client (intrapsychic), individual therapy would be recommended.

Box 45.1 Non-individual and other arenas/modalities of psychotherapy

- **Family therapy:** A client's difficulties may be considered *systemically* when, for example, there are indications that s/he is 'carrying' the family's secret sexual abuse or unexpressed grief and/or is being scapegoated by other family members. It often involves observation and analysis of sessions via one-way mirrors and video recording.
- **Couple counselling/therapy:** This originated in marriage guidance and marital psychotherapy. It's now offered to unmarried as well as married couples, and to homosexual as well as heterosexual partners. Like individual therapy, it's informed theoretically by different schools of thought. But what's unique to couple counselling is the focus on the *relationship* between the partners. Conflicts over domestic arrangements, interpersonal and sexual issues, children, money, affairs – at conscious and unconscious levels – lead many couples, together or separately, to seek professional help.
- **Peer counselling:** This refers to any kind of counselling or therapy provided on an egalitarian basis, with each peer taking on the role of counsellor and the other as client – then reversing roles.

- **Group therapy:** In groups, clients may discover that others experience similar problems to themselves, that they're accepted by group members (which can generalise into everyday life), that they can give as well as receive help and insights, and that they can draw on others' experiences and perceptions. Groups can act as a *bridge* from individual therapy to everyday living, but group and individual therapy may also take place in parallel. *Psychodrama*, *encounter groups* and *therapeutic communities* are, by definition, group therapies, but psychodynamic and client-centred therapies may be individual or group.
- **Counselling/therapy via other media:** Increasingly, therapy is being offered in non-individual arenas and using alternative media. *Child psychotherapy* is a specialism in its own right, as is *sex therapy* (allied to couple/marital counselling/therapy). The *expressive/arts therapies* include art and drama therapy, psychodrama, dance and movement therapy, therapeutic writing, and use of other media (such as photography). The extent to which *telephone helplines* are used is often played down or regarded, unfairly, as an inferior form of therapeutic help. Increasingly, *therapy-on-line* is being used as an alternative to face-to-face therapy, and this will be enhanced by electronic video communication. Some people *prefer* the safety or convenience of 'distant' counselling (which can also include *bibliotherapy*, or recommended self-help books); others have little choice by virtue of geographical remoteness or limited finances.
- People are often helped by social workers, probation officers, welfare officers, nurses, teachers and others, many of whom have specific counselling training and qualifications. This help may be offered more or less formally, and many clients who accept and benefit from it may not otherwise approach, trust or have access to 'counsellors' or 'therapists'.

(Based on Feltham, 2000)



A group therapy session in progress

What is psychotherapy?

The term 'psychotherapy' is sometimes used to refer to all psychological treatments (as opposed to biological or somatic ones). For example, Holmes & Lindley (1989) define it as:

> The systematic use of a relationship between therapist and patient – as opposed to pharmacological or social methods – to produce changes in cognition, feelings and behaviour.

Similarly:

> Psychotherapy is distinguished from such other forms of psychiatric treatment as the use of drugs, surgery, electric shock treatment and insulin coma treatment ... (Freedman *et al.*, 1975)

Feltham (2000) points out that the 'psychological therapies' (as opposed to biomedical approaches) may be concerned not only with mental health, but also with spiritual, philosophical, social and other aspects of living.

'Psychotherapy' (or 'psychodynamic therapy': see Chapter 2) is also used to refer to those methods based, directly or indirectly, on Freud's psychoanalysis. This approach is also known as *insight therapies* ('talking cures').

In the UK, the tradition has been to contrast psychotherapy with behaviour therapy, while in the USA psychotherapy is used more broadly to include behavioural psychotherapy as well as 'psychodynamic therapy'. However, the UK Council for Psychotherapy (UKCP) has a behavioural psychotherapy section (members of which include the British Association for Behavioural and Cognitive Psychotherapy), as well as a psychoanalytic and psychodynamic psychotherapy section. Other sections include humanistic and integrative psychotherapy, and family, marital and sexual therapy. In 1994, there were 73 member organisations of the UKCP. Special members include the British Psychological Society (BPS) and the Royal College of Psychiatrists, and the British Association for Counselling is an affiliated organisation (Pokorny, 1994). The BPS Division of Counselling Psychology was established in 1994.

At present, anyone in Britain may practise as a psychotherapist and advertise their services as such. Unlike the situation in North America and many European countries, psychotherapy isn't a regulated profession. No formal training or subscription to a code of ethics is required by statute (Aveline, 2002). However, for many years the British Association for Counselling (BAC) (with 19,000 members) has operated a system of individual accreditation of counsellors. In 1996, the counselling organisations launched the UK Register of Counsellors (held by the BAC). In 2000, the BAC changed its name to the British Association for Counselling and Psychotherapy (BACP).

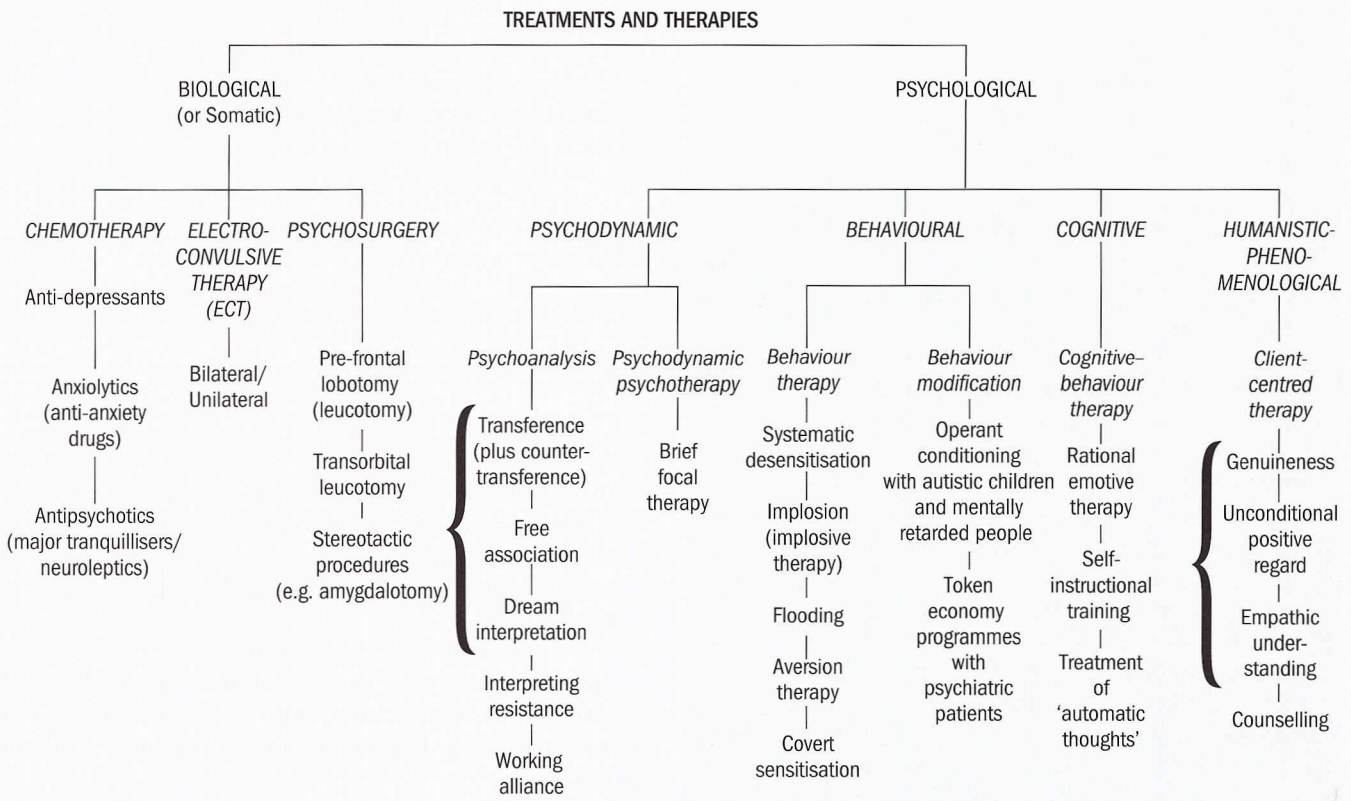


Figure 45.1 Major approaches to treatment and therapy

ASK YOURSELF...

- Looking back at Chapter 44, try to identify (or infer) any principles (or specific details) that would be used by different theoretical approaches in the treatment of mental disorder. (You might find Chapter 2 useful too.)

BIOLOGICAL (SOMATIC) THERAPIES

Chemotherapy

This involves the use of *psychotropic drugs,* that is, drugs designed to affect mainly mental symptoms. Gelder *et al.* (1999) divide these into six groups, according to their primary actions (see Box 45.2). Several also have secondary actions (e.g. antidepressants also reduce anxiety). The focus here will be on the *antidepressants, anxiolytics,* and *antipsychotics.*

Box 45.2 Major categories of psychotropic drugs (Based on Gelder *et al.*, 1999)

Anxiolytics reduce anxiety. Because they have a general calming effect, they're sometimes called *minor tranquillisers*. In larger doses, they cause drowsiness (and so are sometimes called *sedatives*).

Hypnotics promote sleep. Many are of the same type as drugs used as anxiolytics.

Antipsychotics control delusions, hallucinations, and psychomotor excitement in psychoses. They're sometimes called *major tranquillisers* because of their calming effect, and *neuroleptics*, because of their neurological side-effects, such as those resembling Parkinson's disease.

Mood-stabilising drugs are used to prevent the recurrence of affective disorders. One of these is *lithium carbonate* (Lithane or Lithonate), used to treat *bipolar mood disorder.*

Antidepressants relieve the symptoms of depressive disorders, but don't elevate the mood of non-depressed people. They're also used to treat anxiety disorders, including OCD.

Psychostimulants elevate mood, but are used mainly for treating hyperactivity in children.

Antidepressants

The main difference between various kinds of antidepressants is in their side-effects, rather than their effectiveness or speed of action (Gelder *et al.*, 1999). They all increase 5-HT (serotonin) function, and many also increase noradrenaline function. Most can be given just once per day, but they usually 'kick in' only after 10–14 days. They should be withdrawn slowly: sudden cessation can cause restlessness, insomnia, anxiety, and nausea.

Monoamine oxidase inhibitors (MAOIs)

Iproniazid was originally used in 1952 as a treatment for tuberculosis – it elevated patients' mood (without, incidentally, affecting the disease). Iproniazid and related drugs (e.g. *phenelzine* or Nardil) inhibit the activity of an enzyme known as monoamine oxidase (MAO), and gradually increase the activity levels of neurons that utilise noradrenaline (a monoamine) and 5-HT.

These are generally less effective than tricyclics when used to treat severe depression, and no more effective for mild depression. They're seldom the first choice of treatment, because of their side-effects (including cerebral haemorrhage) and dangerous interactions with other drugs and foodstuffs (although *reversible* MAOIs are safer).

Tricyclics

These are so-named because their basic chemical structure includes three carbon rings. *Imipramine* (Tofranil) and *amitryptyline* were the first to be introduced and are still used as a standard for comparing other antidepressants. They seem to act by blocking the reuptake of dopamine and noradrenaline, but some also block the reuptake of serotonin, others block serotonin alone, and some have no known effect on any of these systems (Hamilton & Timmons, 1995). They're effective in the treatment of both mild and severe depression, and are the first choice of drug in the latter.

However, they have many side-effects, including toxic effects on the cardiovascular system. As a result, they're gradually being replaced by modified tricyclics (such as *lofepramine* and *trazedone*) which cause fewer side-effects (Gelder *et al.*, 1999).

Specific serotonin reuptake inhibitors (SSRIs)

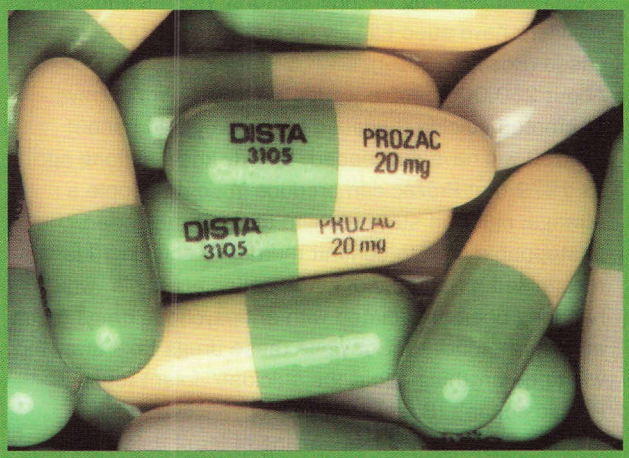
These 'second generation' drugs selectively inhibit the reuptake of serotonin into presynaptic neurons, that is, they make more serotonin available (see Chapter 4). Examples include *paroxetine* and *fluoxetine* (Prozac). They seem to be as effective as tricyclics in treating mild depression, and they're safer for patients with glaucoma and in overdose. Prozac has rapidly become the most commonly prescribed antidepressant medication (Costello *et al.*, 1995), having been taken by more than 38 million people (Boseley, 1999) since its introduction in 1988.

Box 45.3 The Prozac phenomenon: Prozac Nation, UK

- In January 2000, the patent of Prozac's manufacturer (Eli Lilly) expired, meaning that cheap generic versions of the drug are set to flood the international market. This will make 'vitamin P' (as it's been called in the USA) available to those who couldn't previously afford it. This is especially significant given that the World Health Organization (WHO) predicts that depression will become the leading form of ill health across the globe, with an estimated one in three people being affected by 2010 (Munro, 2000).

This would mean 18 million depressed people in the UK alone. According to Munro:

Drugs like Prozac are firmly entrenched in both professional and public minds as the treatment of choice for depression. There is a growing concern that the widespread use of antidepressants is blocking the development of other forms of treatment, such as cognitive therapy. Such a trend could be exacerbated by the increased affordability of fluoxetine ...



Prozac – the world's favourite anti-depressant

- Some feel that an overemphasis on medication has grown from aggressive marketing by drug companies. With Prozac, people for the first time were going to their doctors *asking for* antidepressants *by name*. In 1995, 13.2 million prescriptions were written for *all* types of antidepressant in the UK. In 2002, 26 million prescriptions were written for SSRIs *alone* (Dilner, 2004).
- A recent survey of GPs in the UK found that 80 per cent admit they're overprescribing drugs such as Prozac (and Seroxat: see Critical Discussion 45.1), when patients may simply need someone to talk to. One in three GP appointments now involves patients who are reporting depression (Frith, 2004).
- In 1995, 46,000 prescriptions were given to 16–18-year-olds in full-time education. In 2003, this had risen to 140,000. There's also been a rise of almost 50 per cent in prescriptions for Prozac (and Seroxat) (Townsend, 2004).

ASK YOURSELF...

- One aspect of the controversy surrounding Prozac is its use as a 'designer drug'. Kramer (1993) advocates that everyone could benefit from taking it, since it makes people more assertive and playful, and improves relationships. Kramer believes that in the near future, we'll be able to change our 'self' as easily as we change our clothes ('cosmetic psychopharmacology'). Even if this were possible, do you think it's right?

CRITICAL DISCUSSION 45.1 The Prozac (and Seroxat) controversy: the 'safe' pill that can kill

- Prozac ('vitamin P') was marketed as a wonder drug (Munro, 2000), and its biggest selling-pitch has been that it's almost impossible to kill yourself with an overdose. But since its launch in 1988 in the USA (and in the UK shortly afterwards), there's been a spate of disturbing accounts of violence and suicide committed by people prescribed the drug by their doctors. Victims and families of killers have sued Eli Lilly (see below) in 200 court cases (Boseley, 1999).
- About 250,000 people worldwide taking Prozac have attempted suicide (because of the drug), and about 25,000 will have succeeded. Eli Lilly knew as long ago as 1979 that Prozac can produce in some people a strange, agitated state of mind that can trigger an unstoppable urge to commit murder or suicide. This is a recognised psychiatric disorder called *akathisia*, which has long been associated with antipsychotic drugs (such as chlorpromazine). But while these drugs take away the will to do anything about the suicidal/violent feelings, Prozac doesn't (Boseley, 1999).
- Another SSRI, Seroxat, is proving at least as controversial. Seroxat is among the biggest-selling drugs in the world, and is taken by 600,000–800,000 people in the UK, of whom a significant proportion are under 30 (Laurance, 2004).
- In 2003, Seroxat was banned in the UK for under-18s because of an increased suicide risk. The ban applied to all other SSRIs – except Prozac. According to the Seroxat Users' Group, it's still being prescribed to children and under-18s despite the ban (Townsend, 2004).

How effective are antidepressants?

What this question usually means is: how much more effective are antidepressants than placebos ('dummy drugs', usually inert sugar pills). Fisher & Greenberg (1995) looked at 15 separate reviews of the literature relating to antidepressants, plus two large-scale *meta-analyses* ('studies of studies': see Box 45.10, page 830). Overall, the effectiveness of antidepressants appears to be modest, with a high relapse rate (over 60 per cent) amongst those who respond positively to the drugs but are then taken off them. Their benefits also tend to wane after a few months, even while they're still being taken.

Fisher and Greenberg also discuss the *methodology* of drug trials. In a classic *double-blind design*, neither the patient nor the researcher knows whether the patient is receiving a drug or a placebo. But when the (*inactive*) placebo doesn't produce as many bodily sensations as the drug, participants soon learn to discriminate between them. For example, imipramine causes dry mouth, tremor, sweating, and constipation. These side-effects could be used by those administering the drug/placebo to identify the 'ons' and the 'offs', and they might convey their resulting expectations as to the effects of the drug/placebo to the participants.

For these reasons, *active* placebos (such as atropine), which *do* produce side-effects, are sometimes used. In one review cited in Fisher and Greenberg (1995), 68 studies conducted between 1958 and 1972 which had used an inert placebo were compared with seven which had used atropine. The antidepressant was found to be superior to the placebo in 59 per cent of the former, but in only 14 per cent (one study) of the latter.

Box 45.4 Some other problems with drug trials – and the power of placebo effects

- Depressed people selected for clinical trials usually aren't representative of depressed people as a group. They're moderately depressed, not actively suicidal, and free from other physical and psychiatric illness (Fisher & Greenberg, 1995; Lyddy, 2000). Nevertheless, assigning a depressed person to a placebo condition when there's an effective treatment available is *ethically* problematic.
- Khan *et al.* (2000) studied the potential risk to depressed patients assigned to placebo treatment by examining data from 45 antidepressant clinical trials. The overall incidence of suicide/attempted suicide was low, with no significant difference in risk between active treatments and placebo groups. Interestingly, placebo patients reported substantial symptom reduction (though less than the active treatment groups), and there was a positive correlation between the length of the trial and reduction in symptoms – regardless of the form of treatment group.
- According to Fisher & Greenberg (1995), this isn't surprising, since a response to a placebo is just as biological (i.e. 'real') as a response to an antidepressant. The brain apparently responds in equivalent ways to both talk and drug treatment. Far from being extraneous or less of a biological reality than a chemical agent, placebos have been shown to produce certain effects usually thought to be confined to drugs. For example, they show *dose-level effects* (the larger the dose, the greater the impact), addictions, and toxic effects.
- Because it's impossible to eliminate placebo effects totally, it's impossible to demonstrate that psychotropic drugs have an independent, 'pure' biological impact. Fisher and Greenberg conclude by saying:

  ... Administering a drug is not simply a medical (biological) act. It is, in addition, a complex social act whose effectiveness will be mediated by such factors as the patient's expectations of the drug and reactions to the body sensations created by that drug, and the physician's friendliness and degree of personal confidence in the drug's power ...

Anxiolytics

These are used most appropriately to reduce severe anxiety. They should be prescribed for a short time only (usually a few days, seldom more than two to three weeks), because they can result in tolerance and dependence. Withdrawal effects are reported in people using them for more than six months: the *withdrawal syndrome* includes apprehension and anxiety, tremor, and muscle twitching (see Chapter 8). *Chlordiazepoxide* (marketed as Librium) and *diazepam* (Valium) appeared in the early 1960s, quickly becoming the most widely prescribed drugs of their time. In 1989, for example, there were 21 million prescriptions in the UK alone (Rassool & Winnington, 1993).

Chlordiazepoxide and diazepam are *benzodiazepines* (other examples being temazepam and flurazepam). They were initially called 'minor tranquillisers' (as opposed to the antipsychotic, major tranquillisers), but this terminology became unpopular and they're now simply called *anti-anxiety drugs*. They act by facilitating the activity of GABA (see Chapter 4). As well as anxiolytic, sedative, and hypnotic effects, they have muscle-relaxant and anticonvulsant properties (Gelder *et al.*, 1999).

Antipsychotics

Antipsychotics (or major tranquillisers) such as *chlorpromazine* were originally developed to calm patients facing surgery, and they proved highly effective in reducing the incidence of death from surgical shock. Chlorpromazine (Largactil) and related *phenothiazines* were soon used with psychiatric patients (starting in the early 1950s). They revolutionised psychiatry by allowing the most disturbed schizophrenic patients to live outside a psychiatric hospital, or to reduce their average length of stay. However, many critics have called these drugs 'pharmacological straitjackets'.

They're effective in treating the acute, *positive* symptoms of schizophrenia, such as hallucinations, excitement, thought disorder, and delusions, and they seem to work by blocking the D2 receptor for dopamine. However, they don't touch the *negative* symptoms (emotional blunting, slowness of speech and movement, lack of motivation, social withdrawal: see Tables 44.2 and 44.3, page 791).

Box 45.5 Some side-effects of antipsychotic drugs

- *Extrapyramidal* (EP): *acute dystonia* (involuntary muscle contraction), *akathisia* (inner restlessness, agitation and pacing), *Parkinsonism* (shuffling gait, tremor, expressionless face etc.), and *tardive dyskinesia* (chewing and sucking movements, grimacing, akathisia).
- *Anticholinergic:* dry mouth, blurred vision, low blood pressure (which may cause fainting attacks), constipation, glaucoma.
- *Neurolepticmalignant syndrome:* fluctuating levels of consciousness, hyperthermia, muscular ('lead pipe') rigidity, autonomic disturbances (such as unstable blood pressure, urinary incontinence and tachycardia). While this is rare, it can be life-threatening, and can occur with *any* antipsychotic drug, at any dose, at any time (Hutton, 1998).

(Based on Gelder *et al.*, 1999)

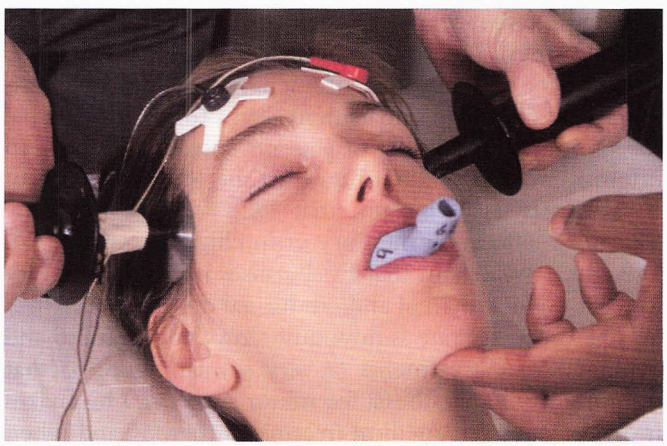
The newer, 'atypical' antipsychotic drugs, such as *clozapine* and *riperidone,* are less likely to cause EP symptoms and may also treat the negative symptoms of schizophrenia. Clozapine is also the first atypical drug shown to be effective in treating patients who have failed to respond to 'typical' antipsychotics such as chlorpromazine (*Effective Health Care,* 1999; Gelder *et al.*, 1999).

Electroconvulsive therapy

In 1938, Cerletti and Bini, two Italian doctors, first gave an electric shock to the brain of a psychiatric patient, on the assumption that if a grand mal epileptic fit is induced (artificially), this should reduce or eliminate the symptoms of schizophrenia. Electroconvulsive therapy (ECT) started to be used widely in the USA from the early 1940s. Ironically, it was found to be more effective for severe depression than schizophrenia, and is now used mainly with depressive patients.

The procedure

The patient is made comfortable on a bed, clothes loosened and shoes and dentures removed. Atropine is given as a routine pre-anaesthetic medication (to dry up salivary and bronchial secretions) and then thiopentone, a quick-acting anaesthetic, followed by a muscle relaxant. A 70–150-volt shock lasting 0.04–1.00 second is then given through electrodes ('paddles') placed on the temples, producing a generalised convulsion lasting for up to a minute (detected by facial and limb twitching). Typically, two to three treatments per week are given for three to four weeks. Less commonly, treatment is given every two



ECT as it is carried out today. Despite the technical improvements, ECT is a highly controversial treatment

to four weeks for six months or longer to prevent relapse (*continuation* or *maintenance ECT*: Bennett, 2003).

Many psychiatrists believe that for severe depression, *bilateral* ECT (one electrode on each side of the head) is preferable, as it acts more quickly and fewer treatments are needed. (This was the common practice up until the 1950s). In *unilateral* ECT, an electrode is applied to the *non-dominant* hemisphere side (the right side for most people) to reduce the side-effects, particularly memory disruption (Benton, 1981).

Contrary to popular belief, ECT is still widely used. Its use began to decline substantially during the 1950s with the introduction of psychotropic drugs, but it was given to 11,340 patients in England and Wales in 1999 (peaking at 28,000 in 1985). Of these, two-thirds were women, 41 per cent were over 65, and 15 per cent were in hospital under section (i.e. involuntarily). It's rarely used in Japan and many other European countries (Johnstone, 2003).

Side-effects

Short-term risks are those associated with being given an anaesthetic and having an epileptic fit. MIND (the National Association for Mental Health) and PROMPT (Protect the Rights of Mental Patients in Therapy) in the UK, and NAPA (Network Against Psychiatric Assault) in the USA, object to it primarily on *ethical* grounds. Some people describe it as a terrifying experience, and regard it as an abusive invasion of personal autonomy (Bennett, 2003). Some experience it as a damaging repeat of earlier traumas (such as physical/sexual abuse), undermining their trust in mental health professionals (Johnstone, 1999; MIND, 2001). Continuing to use ECT in the light of these accounts becomes an ethical issue.

Memory disruption includes retrograde amnesia and impaired ability to acquire new memories (see Chapter 17). But because depression is associated with impaired memory function, it's unclear to what extent ECT itself is responsible (Benton, 1981). The patient is normally confused for up to 40 minutes following treatment, but recall of events prior to treatment gradually returns (although some degree of memory loss may persist for several weeks). The shift from bilateral to unilateral ECT has reduced the amount of memory deficit (Bennett, 2003), but cognitive impairment seems to be unavoidable for an unknown number of patients (a scandal waiting to erupt: Kendell, 1998). Contrary to the Royal College of Psychiatrists' (1997) claim that ECT doesn't have any long-term effects on memory or intelligence, critics (e.g. Breggin, 1997) claim that ECT causes not only memory loss but general mental and emotional dysfunction.

The mortality rate is now quite low (between 3.6 and 9 per 100,000 treatments (a very similar figure to that resulting from anaesthesia for minor surgery). This makes it one of the safest medical treatments there is, and when the number of suicides resulting from depression are taken into account, ECT emerges as 'among the safest medical treatments given under general anaesthesia' (RCP, 1997, in Johnstone, 2003).

However, only one-third of clinics are currently meeting RCP guidelines. For example, staff are poorly trained and supervised, and some clinics use machines that don't allow a sufficiently wide range of current to be delivered. Consequently, patients with a low seizure threshold (which can vary by up to 40 times between different people) may receive too high a dosage (Johnstone, 2003).

How effective is ECT?

ASK YOURSELF...

- Based on methods used in clinical drug trials, how do you think the effectiveness of ECT might be assessed?
- Does this raise similar ethical problems to clinical drug trials?

Sackeim (1989) reviewed controlled comparisons of real and *sham* (simulated or 'dummy') ECT. In simulated ECT, the patient undergoes all aspects of the ECT procedure except that no electrical current is passed through the brain (so no seizure is produced). He concluded that real ECT is significantly more effective than sham ECT. Also, bilateral is slightly more effective than unilateral (but, as we've seen, this is outweighed by the former's greater memory deficits). Sackeim also concluded that ECT is more effective than antidepressant drugs, and probably the most effective available treatment for depression. However the use of medication following ECT can help to prevent relapse.

Current psychiatric opinion in the UK is represented by the RCP *ECT Handbook* (1995), according to which 'ECT ... is an effective treatment in severe depressive illness' and occasionally in other conditions, such as psychosis and mania. In support of ECT, the *Handbook* cites a study by Buchan *et al.* (1992).

KEY STUDY 45.1 Testing the effects of ECT (Buchan *et al.*, 1992)

- Buchan *et al.* compared *sham* (placebo) ECT with real ECT, following up patients four weeks and six months after treatment.
- They concluded that:

(a) ECT did have some beneficial effects, but only with patients whose depression was accompanied by physical retardation or delusions (a very small minority of those diagnosed as depressed) – 'real ECT does not appear to be effective in non-retarded, non-deluded patients'

(b) This benefit was evident at four weeks, but at six months there was no difference between the placebo and treatment groups.

Reviews of the research (e.g. Breggin, 1997) have generally been unable to find any controlled studies showing the benefits of ECT lasting longer than four weeks. Also, the relapse rate is high (RCP, 1995).

How does ECT work?

Benton (1981) identifies three explanations of how ECT works.

- Patients come to see ECT as a *punishment* which extinguishes their undesirable behaviour. However, equally unpleasant but subconvulsive shocks (which don't produce a convulsion) aren't effective. This is inconsistent with the 'punishment' explanation.
- *Memory loss* allows the restructuring of the patient's view of life. However, unilateral ECT is intended to minimise memory disruption but is also effective in reducing depression (see above).
- The shock produces a wide range of *biochemical changes* in the brain (e.g. the stimulation of neurotransmitters, including noradrenaline and endorphins: Lilienfeld, 1995). This effect is more widespread than that produced by antidepressant drugs.

According to Abrams (1997: author of the standard textbook *Electroconvulsive Therapy*):

> Modern ECT researchers ... do not have any more of a clue to the relationship between brain biological events and treatment response in ECT than they did at the time of the first edition of this book – which is to say, none at all.

ASK YOURSELF...

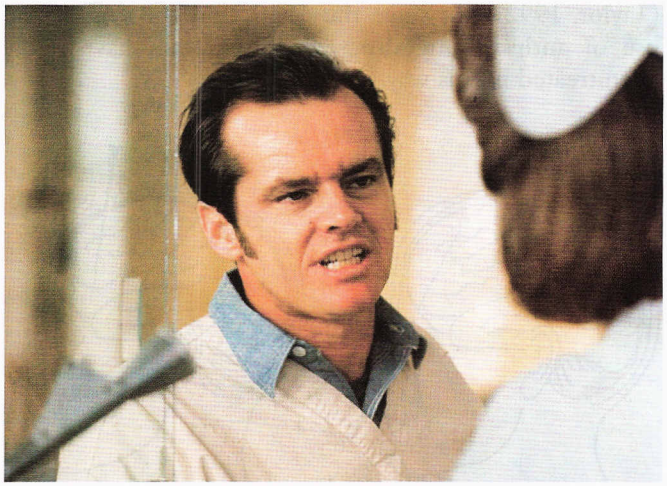
- Since we don't know how ECT works (and whether it works), should it be used at all?

Benton (1981) argues that this isn't a reason for not using it: many medical treatments fall into this category (e.g. the use of aspirin in the treatment of headaches). But Szasz (1971) believes that:

> ... electricity as a form of treatment requires the sacrifice of the patient as a person, [and] of the psychiatrist as a clinical thinker and moral agent.

This view is supported by many psychological organisations, including the BPS. In the USA, the National Institute of Health (1985) observes that ECT has been used inappropriately to treat disorders where there's no evidence of its effectiveness. It also notes that the use of ECT to manage disruptive patients has contributed to its public perception as an abusive instrument of *behavioural control* for patients in mental institutions.

According to Breggin (1991, 1997), ECT 'works' by causing *brain damage.* Patients suffer *anosognosia,* a condition in which they deny their psychological and physical difficulties (rather like 'treating' prolonged depression by being permanently drunk). While loss of painful memories may be felt as a relief, this state is sometimes mistaken by staff and patients alike for improvement.



Jack Nicholson as McMurphy and Louise Fletcher as Nurse Ratchet in *One Flew Over the Cuckoo's Nest* (1975)

Psychosurgery

Psychosurgery was pioneered by Moniz, a Portuguese professor of neurology. He was so impressed by the tranquillising effects of lesions to the frontal lobes of monkeys that in 1935 he performed the first *prefrontal lobotomies* (or *leucotomies*) on human schizophrenics. Between 1935 and 1949, Moniz performed about 100 such operations, in which tissue connecting the frontal lobes of the cortex with subcortical brain areas is cut on both sides of the cortex (see Figure 45.2). (Moniz was awarded the Nobel Prize for Medicine in 1949, and was later shot in the spine by one of his lobotomised patients, confining him to a wheelchair for the rest of his life.)

Freeman & Watts (1942) pioneered psychosurgery in the USA, and it's been estimated that 40–50,000 prefrontal lobotomies have been performed in the USA alone since the late 1930s. They modified Moniz's technique by inserting a scalpel either into burr holes drilled through the patient's temple, or through the eye socket (*transorbital leucotomy:* see Figure 45.2). Although their so-called 'standard leucotomy' was far from standardised anatomically, and despite unacceptable side-effects, the procedure was widely used in the UK and other countries (Gelder *et al.*, 1989). For example, in the UK, over 10,000 operations were carried out between 1936 and 1961, about 20 per cent of which involved schizophrenics (Bennett, 2003).

Now, only about 20 operations per year are carried out in the UK, and only for conditions that have proven unresponsive to various alternative treatments. In England and Wales, the use of psychosurgery is governed by the Mental Health Act 1983, which endorses it only as a last resort, requiring the patient's consent. It's still used in other countries, especially Australia and the USA

(Taylor, 1992), but since the 1950s and the widespread use of antipsychotic drugs, schizophrenics have rarely been treated in this way.

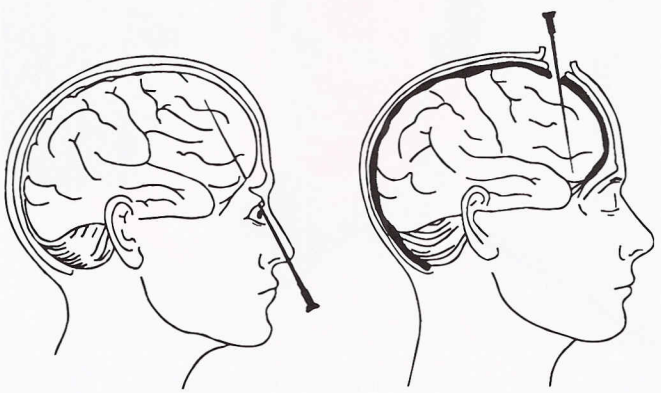


Figure 45.2 The drawing on the left shows the technique used by Freeman and Watts (transorbital leucotomy), a modification of Moniz's classical prefrontal lobotomy/leucotomy (shown on the right)

Box 45.6 Modern forms of psychosurgery

- Today, the older 'blind' operations have been replaced by *stereotactic* procedures, which allow only very small amounts of brain tissue to be destroyed in very precise locations ('fractional operations').
- For example, *amygdalotomy* involves bilateral lesions in the amygdala (destroying the neural circuit connecting the amygdala and the hypothalamus), usually in the treatment of abnormal, intractable aggression.
- The neurosurgeon usually creates lesions with heated electrodes, except in the case of *stereotactic subcaudate tractotomy* (SST). This involves placing radioactive rods into the target area, which destroy parts of the subcaudate area through brief bursts of radioactivity. It's usually used for severe, intractable depression.
- In the UK, a candidate for surgery would have to have made more than two serious suicide attempts, have been clinically depressed for at least 18 years, with the present episode lasting seven years without remission for at least six months, to have received over 30 ECT treatments and unusually large doses of antidepressants. A panel appointed by the Mental Health Act Commission has to be convinced that the person is giving full consent – and that the surgery is likely to be beneficial (Bennett, 2003).

ASK YOURSELF...

- However effective it might be, should psychosurgery *ever* be used – even as a last resort?

(Based on Gelder *et al.*, 1989)

Side-effects

These have included apathy, lethargy, epilepsy, intellectual impairment, aggressiveness and personality change, as well as death. Since the introduction of the more precise sterotactic techniques, mortality has dropped to 1 per 1000 cases, and epilepsy to 1–5 per cent (Jenike, 1998). Also, there's no evidence of reduced intellectual functioning (in fact, many patients perform *better* on psychometric tests than they did before surgery). Nor is there evidence of significant personality changes, despite potential for damage to the frontal lobe (thought to control functions crucial to personality). But the psychometric tests used may not be able to detect subtle frontal lobe deficits – so we cannot rule out the possibility of such damage (Jenike, 1998).

A number of people commit suicide after surgery, but whether this is as a result of the surgery itself, or would have happened anyway, is unclear. One possibility is that patients see the surgery as their last hope, and the outcome is disappointing (Bennett, 2003).

Does psychosurgery work and should it ever be used?

Due to the lack of controlled evaluations, assessments of psychosurgery's effectiveness must be based on follow-up studies of patients who've undergone the procedure. But it's impossible to determine how much improvement would have taken place without surgery (Gelder *et al.*, 1989). While some improvements have been reported:

> ... this intervention is rightfully viewed as a treatment of very last resort, given the permanence of psychosurgery and the poorly understood ways in which it works ... (Davison & Neale, 1994)

Even with modern stereotactic procedures, serious side-effects still occur, and they should only ever be used if all other forms of treatment are considered inappropriate or have been tried and failed (Gelder *et al.*, 1989).

PSYCHOANALYSIS AND OTHER PSYCHODYNAMIC APPROACHES

Freud's model of psychological disorder

In Chapter 42, *neurotic symptoms* were described as compromises between the opposing demands made on the ego by the id and the superego. Symptoms (along with dreams and defences) are expressions of the inevitable conflict which arises from these opposing demands and are, at the same time, attempts to deal with it.

When a person experiences anxiety, the ego is signalling that it fears being overwhelmed by an all-powerful id (*neurotic anxiety*) or superego (*moral anxiety*), and so must mobilise its defences. Anxiety is the hallmark of most neurotic disorders, but except in 'free-floating anxiety', it becomes redirected or transformed in some way (depending on which particular defence is used).

Consequently, the resulting symptom makes it even less likely that the true nature of the problem (i.e. the underlying conflict) will be spotted. *Phobias,* for example, involve *repression* (as do all neuroses), plus *displacement* and *projection* (see Chapter 44).

ASK YOURSELF...

- Try to explain Little Hans' phobia of being bitten by a horse in terms of these three ego defences (see Chapter 35).

Hans' horse phobia could be explained in terms of:

- repressing his jealous anger and hatred felt towards his father
- projecting these feelings onto his father, thus seeing him as a threatening, murderous figure, and
- displacing this perception of his father on to a 'safer' target, namely, horses.

As we noted in Chapter 42, Freud believed that phobic objects symbolically represent the object for which they're a substitute.

Neuroses are *maladaptive solutions* to the individual's problems: they don't help resolve the conflict, but merely help to *avoid* it (both in thought and behaviour). The neurotic's behaviour usually creates its own distress and unhappiness – this is the *neurotic paradox*.

ASK YOURSELF...

- Try to explain neurotic behaviours (and the neurotic paradox) in terms of *learning theory* (i.e. conditioning).

So, in summary, psychoneurotic symptoms are indicative of deep-seated, unresolved, unconscious conflicts, usually of a sexual and/or aggressive nature, stemming from childhood feelings, memories, wishes and experiences. However, the defences used to deal with the conflict are ineffective, creating their own distress and anxiety.

The aims of psychoanalysis

The goals of psychoanalysis can be stated in very broad, abstract terms, such as 'a far-reaching and radical restructuring of the personality' (Fonagy, 1995) and as attempts to provide the client with insight, self-knowledge and self-understanding. More specifically, the basic goal of psychoanalysis is to make 'the unconscious conscious', to undo unsatisfactory defences and, through a 'therapeutic regression' (Winnicott, 1958), to re-experience repressed feelings and wishes, which have been frustrated in childhood, in a safe context, and to express them, as an adult, in a more appropriate way, 'with a new ending' (Alexander & French, 1946).

In relation to the structure of personality model, Freud (1938) believed that the analyst and the patient's weakened ego needed to become allies against the instinctual demands of the id and the conscientious demands of the superego. Analysts who still subscribe to this model aim primarily to extend, through the psychoanalytic process, patients' knowledge of themselves (*insight*), in the hope that this may enable them to make choices that aren't exclusively ruled by neurotic needs – to explore new compromises and more adaptive solutions (Lemma, 2002).

Therapeutic techniques

The role of the analyst

In classical psychoanalysis, the analyst is meant to remain faceless and 'anonymous', not showing any emotion or revealing any personal information. Instead:

> ... The doctor should be opaque to his patients and, like a mirror, should show them nothing but what is shown to him ... (Freud, 1912, in Jacobs, 1992)

With the analyst as an 'ambiguous object' or 'blank screen', the patient is able to project and displace repressed feelings, in particular those concerning parents (*transference*). This process is aided by the client lying on a couch, with the analyst sitting behind, out of the client's (*analysand's*) field of vision. Jacobs (1992) notes that, in practice, Freud often became personally involved in the therapeutic conversation and would explain his thinking to the patient (see below).

Transference and counter-transference

Transference typically goes through a positive phase of emotional attachment to the analyst, followed by a negative and critical phase. According to Freud, this reflects working through the ambivalence experienced in the patient's childhood relationship with his/her parents (Stevens, 1995). According to Thomas (1990), transference has become so central to the theory and practice of psychoanalysis that many analysts believe that making *interpretations* about transference is what distinguishes psychoanalysis from other forms of psychotherapy. When attention is focused on the transference and what's happening in the here and now, the historical reconstruction of childhood events and the search for the childhood origins of conflicts may take second place.

The related process of *counter-transference* refers to the therapist's feelings of irritation, dislike or sexual attraction towards the client. Thomas (1990) maintains that:

> ... In Freud's time, counter-transference feelings... were considered to be a failing on the part of the analyst. These feelings were to be controlled absolutely ... Now, counter-transference is considered an unavoidable outcome of the analytic process, irrespective of how well prepared the analyst is by analytic training and its years of required personal analysis ... most modern analysts are trained to observe their own counter-transference feelings and to use these to increase their understanding of the patients' transference and defences ...



Sigmund Freud's couch (Freud Museum Publications Ltd)

Interpretation and resistance

To enable the client to understand the transference and how it relates to childhood conflicts, the analyst must *interpret* it, that is, tell the client what it means in relation to what's already been revealed about the client's childhood experiences. Because this is likely to be painful and distressing, clients show *resistance*. This may take the form of 'drying up' when talking, changing the subject, dismissing some emotionally significant event in a very flippant way, even falling asleep or arriving late for therapy. All forms of resistance require interpretation.

The working alliance

As important as the analyst's anonymity may be, the '*working alliance*' with the client is just as crucial. According to Jacobs (1984), this consists of two adults cooperating to understand the 'child' in the client. The analyst adopts a quiet, reflective style, intervening when s/he judges the client to be ready to make use of a particular interpretation. This is an art, and *doesn't* involve fitting the client into psychoanalytic theory, as some critics suggest (Jacobs, 1984).

Two other major techniques used to reveal the client's unconscious mind are *dream interpretation* (see Chapter 42) and *free association,* in which the client says whatever comes to mind, no matter how silly, irrelevant or embarrassing it may seem. Freud insisted on the rule of free association, because he realised that however plausible the patients' reasons were for their conscious thoughts and images, these were used by deeper (unconscious) forces demanding to be expressed. Free association is an ideal that patients strive towards – in practice, it's very difficult to share all the contents of our thoughts. Nevertheless, the principle of free association underpins all current psychoanalytic practice (Lemma, 2002).

Both dream interpretation and free association may lead to resistance which, like transference, will in turn be interpreted by the analyst.

CRITICAL DISCUSSION 45.2 The concept of cure. How do you know when to stop?

- According to Jacobs (1984), the goals of therapy are limited by what clients consciously want to achieve and are capable of achieving, together with their motivation, ego strength, capacity for insight, ability to tolerate the frustration of gradual change, financial cost, and so on. These factors, in turn, determine how a cure is defined and assessed.
- In practice, psychoanalysis ranges from *psychoanalytical first aid* (Guntrip, 1968) or symptom relief, to different levels of more intense work. However, Storr (1966) believes that symptom relief is an inappropriate way of perceiving 'cure', partly because symptom analysis is only the start of the analytic process, and also because a majority of clients don't have clear-cut symptoms anyway. Similarly, Fonagy (2000) says that:

  ... Symptom change as a sole indicator of therapeutic benefit must indeed be considered crude in relation to the complex interpersonal processes that evolve over the many hundreds of sessions ...

- Freud himself recognised that psychoanalysis was only likely to be successful if the patient is voluntary, open to change, acknowledges that there's a problem, and is neurotic rather than psychotic (the latter being unable to form a positive transference). Even if the patient possesses these characteristics, fresh neuroses or even the return of the original one cannot be ruled out. Analysis never really ends.
- Indeed, Freud famously claimed that psychoanalysis could help transform 'hysterical misery' into 'common unhappiness'. This is as much as one could hope for, given that intrapsychic conflict is an inevitable part of human life. He also believed that psychoanalysis should be valued for its contributions to a science of human being rather than for any quick results in terms of personality change or the alleviation of neurotic symptoms (Lemma, 2002: see Chapters 2 and 3).

According to Fonagy (2000), evidence from a significant number of before–after studies suggests that psychoanalysis is consistently helpful to patients with milder (neurotic) disorders, and somewhat less consistently so for groups with more severe disorders. Other less well controlled studies suggest that longer intensive treatments tend to have better outcomes than shorter, non-intensive treatments. The impact of psychoanalysis is evident not just in relation to symptoms, but as measured by patient's work performance and reduction in health-care costs.

Psychodynamic psychotherapy

In the UK, classic psychoanalysis requires the client to attend 3–5 sessions per week for several years (Fonagy, 2000) which for many people is far too expensive, as well as too time consuming.

In a modified form of analysis, therapist and client meet once or twice weekly for a limited period. There may be a 'contract' for a specified number of weeks as opposed to the open-ended arrangement of classic analysis. For example, Malan (1976) uses *brief focal therapy* (one session per week for about 30 weeks), in which the focus is on fairly specific psychological problems (such as a single conflict area or relationship in the client's current life). Although all the basic techniques of psychoanalysis may be used, there's considerably less emphasis on the client's past, and client and therapist usually sit in armchairs facing each other. This form of psychotherapy is practised by many clinical psychologists (as well as psychiatrists and social workers), who haven't received a full-blown psychoanalytic training (Fonagy, 1995; Fonagy & Higgitt, 1984). Fonagy (2000) cites evidence supporting the effectiveness of brief dynamic psychotherapy.

BEHAVIOURAL APPROACHES

Models of psychological disorder

According to the behavioural model, all behaviour, whether adaptive or maladaptive, is acquired by the same principles of classical and/or operant conditioning (see Chapter 11).

The medical model is completely rejected, including any distinction between 'symptoms' and underlying pathology. According to Eysenck (1960), if you 'get rid of the symptom... you have eliminated the neurosis'. But according to Freud, if treatment tackles only the symptoms and not the underlying conflict, new neurotic symptoms will replace those which are removed (*symptom substitution*).

However, this is increasingly being seen as an oversimplification and misunderstanding of what behaviour therapy involves. Wachtel (1989), for example, argues that in some ways all theories and therapies make assumptions about 'symptoms as manifestations of some underlying problem'. What distinguishes different approaches is the view taken of the *nature* of those underlying problems, and how much change is needed for the problem to be remedied. He calls for an integration between the two approaches which, in practice, is already happening.

Behavioural technology vs behavioural analysis

According to Mackay (1975), some behaviour therapists (e.g. Eysenck, Rachman, and Marks) try to discover which techniques are most effective with particular diagnostic groups. This *nomothetic* approach is called *behavioural technology*. Others (e.g. Yates and Meyer) believe that therapists should isolate the stimuli and consequences that are maintaining the inappropriate behaviour in each individual case, and that, accordingly, any treatment programme should be derived from such a 'behavioural analysis' (or 'functional analysis'). This *idiographic* approach is called *behavioural psychotherapy*.

Part of the functional analysis is an emphasis on current behaviour–environment contingencies, in contrast to the Freudian emphasis on past (particularly early childhood) events, and unconscious (and other internal) factors. Psychological problems are *behavioural* problems, which need to be *operationalised* (described in terms of observable behaviours) before we attempt to change them. According to Richards (2002), 'behavioural psychotherapy' is now the preferred term for describing all the techniques that have traditionally been called 'behaviour therapy' as well as those that are often discussed under the separate heading (as in this chapter) of *cognitive behaviour therapy* (CBT). For many clinical psychologists, the theoretical models of abnormality that behavioural techniques are derived from are less important than the fact that they are *evidence-based:*

> ... Behavioural psychotherapy has ... developed via a potential mix of evidence from both science and clinical trials ... for many clinicians, the theories of learning most often associated with behavioural psychotherapy matter far less than evidence-based technical eclecticism – i.e. what works for patients (Richards, 2002)

Classical conditioning, phobias and preparedness

ASK YOURSELF...

- How, according to classical conditioning, do phobias arise? (See Chapter 11, pages 174–175.)
- What are the limitations of this explanation?

According to Eysenck & Rachman (1965), the case of Little Albert exemplifies how all phobias are acquired (i.e. through classical conditioning):

> Any neutral stimulus, simple or complex, that happens to make an impact on an individual at about the time a fear reaction is evoked, acquires the ability to evoke fear subsequently... there will be generalisation of fear reactions to stimuli resembling the conditioned stimulus ... (Wolpe & Rachman, 1960)

One of the problems with this explanation is that some phobias are easier to induce in the laboratory than others (in participants who don't already have them), and it's well known that certain naturally occurring phobias are more common than others. These findings are consistent with Seligman's (1970) concept of *preparedness*.

Even more difficult for the classical conditioning model to explain is the *persistence* of naturally occurring phobias (that is, their failure to extinguish).

ASK YOURSELF...

- How can *operant conditioning* help to explain the persistence of phobias? (See Chapter 44, page 778.)

Mowrer's (1960) 'two-process' theory has been extremely influential in behavioural psychotherapy, much of which is aimed at helping clients to modify the reinforcers ('maintenance factors') that keep their problem behaviours going. People are helped to break the cycle of fear and *avoidance* (Richards, 2002: see below).

The persistence of neurotic behaviour may also be accounted for in terms of what Freud (1926) called *secondary gain*. This refers to the attention and sympathy the neurotic receives from other people, which (unintentionally) positively reinforces it.

Behaviour therapy

Behaviour therapy (BT) refers to techniques based (primarily) on *classical conditioning,* developed by psychologists such as Eysenck and Wolpe. Wolpe (1958) defined behaviour therapy as 'the use of experimentally established principles of learning for the purpose of changing unadaptive behaviour'.

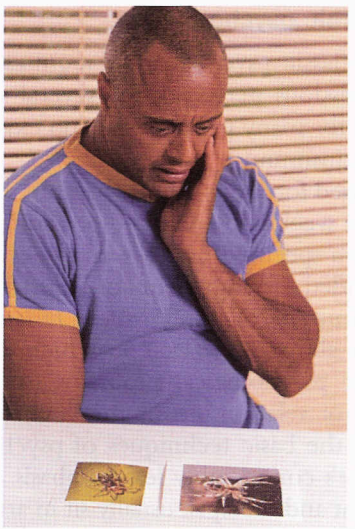
Systematic desensitisation

The case of Little Peter (see Chapter 11) represents the earliest example of any kind of behavioural treatment, and the methods used to remove his phobia of animals were later called *systematic desensitisation* (SD) by Wolpe (1958). It represents a form of *counter-conditioning,* and the key principle in SD is that of *reciprocal inhibition,* according to which:

> ... if a response inhibitory of anxiety can be made to occur in the presence of anxiety-evoking stimuli it will weaken the bond between these stimuli and the anxiety ... (Wolpe, 1969)



Joseph Wolpe (1915–1997)



Behaviour therapy with a spider phobic

In other words, it's impossible for someone to experience two opposite emotions (e.g. anxiety and relaxation) at the same time. Accordingly, a patient with a phobia is first taught to relax through deep muscle relaxation, in which different muscle groups are alternately relaxed and tensed (alternatively, hypnosis or tranquillisers might be used). So, relaxation and fear of the object or situation 'cancel each other out' (this is the '*desensitisation*' part of the procedure).

The '*systematic*' part of the procedure involves a graded series of contacts with the phobic object (usually by imagining it), based on a *hierarchy* of possible forms of contact from the least to the most frightening. Starting with the *least* frightening form of contact, the patient, while relaxing, imagines the object (e.g. the word 'spider' on a printed page) until this can be managed without feeling any anxiety at all. Then, and only then, the next most feared contact will be dealt with, in the same way, until the *most* frightening contact can be imagined with no anxiety (e.g. a large, hairy spider running all over your body).

Wolpe used imagination, because some of his patients' fears were so abstract (e.g. fear of criticism or failure) that it was impractical to confront them using real-life situations. He also believed that the ability to tolerate stressful imagery is generally followed by a reduction in anxiety in related real-life situations. Between sessions, patients are usually instructed to put themselves in progressively more frightening real-life situations. These 'homework assignments' help to move their adjustment from imagination to reality (Davison & Neale, 1994).

An evaluation of SD

- Rachman & Wilson (1980) and McGlynn *et al.* (1981) believe that SD is definitely effective, although it's most effective for the treatment of specific phobias (e.g. animal phobias) as opposed to, say, agoraphobia (see Chapter 44), and for patients capable of learning relaxation skills and with sufficiently vivid imaginations to be able to conjure up the sources of their fear.

- A limitation of SD is that some patients may have difficulty transferring from the imaginary stimulus to real-life situations.
- There's some debate as to whether either relaxation or the use of a hierarchy of contact situations is actually necessary at all. According to Wilson & Davison (1971), for example, relaxation might be merely a useful way of encouraging a frightened person to confront what they're afraid of, which would otherwise be avoided.
- According to Marks (1973), SD works not because of the inhibiting effect of relaxation on anxiety (reciprocal inhibition), but because of the *exposure* to the feared situation; this seems to represent the generally accepted view among psychologists. Exposure is especially effective if it allows the person to disprove his or her predictions that something awful will happen if they come into contact with the feared object or situation, and graded exposure helps to build up the person's confidence to be able to cope with the exposure (Williams & Hargreaves, 1995).
- According to Richards (2002), graded exposure *in vivo* (that is, confronting real-life animals or situations) is the 'singularly most effective psychotherapeutic technique of modern times'.

Implosion (implosive therapy) and flooding

The essence of *implosion* is to expose the patient to what, in SD, would be at the top of the hierarchy. Instead of gradual exposure accompanied by relaxation, the patient is 'thrown in at the deep end' right from the start. This is done by getting the patient to imagine their most terrifying form of contact (the big, hairy spider let loose, again) with vivid verbal descriptions by the therapist (*stimulus augmentation*) to supplement the patient's vivid imagery. How is it meant to work?

- The patient's anxiety is maintained at such a high level that eventually some process of *exhaustion* or *stimulus satiation* takes place – the anxiety level can only go down!
- *Extinction* occurs by preventing the patient from making the usual escape or avoidance response (Mowrer, 1960). Implosion (and flooding), therefore, represents a form of 'forced reality testing' (Yates, 1970).

Flooding is exposure that takes place *in vivo* (e.g. with an actual spider). Marks *et al.* (1971, cited in Marks, 1981a) compared SD with flooding, and found flooding to be superior. Gelder *et al.* (1973) compared SD with implosion and found no difference.

ASK YOURSELF...

- What conclusions can you draw from these findings?

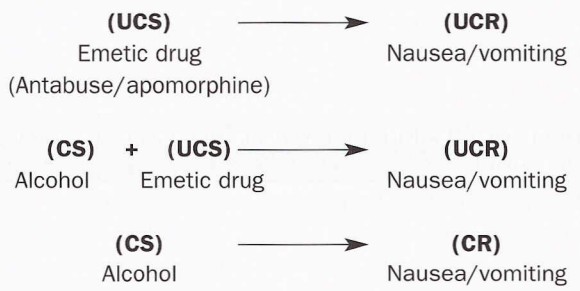
These findings suggest that *in vivo* exposure is what's crucial, and several researchers consider flooding to be more effective than implosion. Emmelkamp & Wessels (1975) and Marks (1981b) used flooding with agoraphobics very successfully, and other studies have reported continued improvement for up to 9 years after treatment without the appearance of 'substitute' problems. Wolpe (1973) forced an adolescent girl with a fear of cars into the back of a car and drove her around continuously for four hours. Her fear reached hysterical heights but then receded and, by the end of the journey, had completely disappeared. Marks (1981a), in a review of flooding studies, found it to be the most universally effective of all the techniques used to treat phobias.

ASK YOURSELF...

- Do you think that flooding is an ethically acceptable method of treating phobias?

Aversion therapy

In *aversion therapy,* some undesirable response to a particular stimulus is removed by associating the stimulus with another, aversive, stimulus. For example, alcohol is paired with an emetic drug (which induces severe nausea and vomiting), so that nausea and vomiting become a conditioned response to alcohol.





Malcolm McDowell in a scene from *Clockwork Orange*. His eyes are clamped open, forcing him to watch a film portraying acts of violence and sadism, as part of aversion therapy. He'd earlier been given an emetic drug, so that extreme nausea and violence will become associated

Patients would, typically, be given warm saline solution containing the emetic drug. Immediately before the vomiting begins, they're given a four-ounce glass of whisky which they're required to smell, taste and swill around in the mouth before swallowing. (If vomiting hasn't occurred, another straight whisky is given and, to prolong nausea, a glass of beer containing emetic.) Subsequent treatments involve larger doses of injected emetic, or increases in the length of treatment time, or a widening range of hard liquors (Kleinmuntz, 1980). Between trials, the patient may sip soft drinks to prevent generalisation to all drinking behaviour and to promote the use of alcohol substitutes. Meyer & Chesser (1970) found that about half their alcoholic patients abstained for at least one year following treatment, and that aversion therapy is better than no treatment at all.

More controversially, aversion therapy has been used with homosexuals, fetishists, male transvestites, and sado-masochists. Marks *et al.* (1970) reported desired changes for up to two years after treatment. In a typical treatment, slides of nude males are presented to male homosexuals, and then quickly followed by electric shocks. The conditioned response to the slides is intended to generalise to homosexual fantasies and activities outside the treatment sessions. More recently, attempts have been made to replace homosexual responses with heterosexual ones, by showing slides of naked females: any sexual response will terminate the shock.

CRITICAL DISCUSSION 45.3 Aversion therapy as a form of heterosexism

- Many psychologists have argued that the social pressures on homosexuals to become 'straight' make it difficult to believe that the small minority of people who consult therapists for help in changing sexual preference are acting from choice (Davison & Neale, 1994).
- The very fact that *change-of-orientation* treatments exist can be seen as condoning *heterosexism*. Clinicians work to develop procedures and study their effects only if they're concerned about the problem which their techniques are intended to remedy. The therapeutic literature contains relatively little material on helping homosexuals develop as individuals without this involving a change of sexual orientation. This contrasts with the many books and articles on how best to discourage homosexual behaviour and replace it by heterosexuality.
- One very radical proposal is that therapists shouldn't help homosexuals become straight, even when such treatment is requested. But this, in turn, raises basic questions about limiting the options available to clients and, in refusing such treatment, aren't therapists making value judgements, just as they are when they agree to it? Isn't it the professional responsibility of therapists to meet the needs expressed by their clients? However, a client's request for a certain kind of treatment has never been sufficient justification for providing it (Davison & Neale, 1994).
- In fact, there's been a dramatic reduction in the use of aversion therapy with homosexuals since the mid-1970s.

ASK YOURSELF...

- What to do you think about the issues raised in Critical Discussion 45.3? (See Chapter 48 for a discussion of more general ethical issues relating to therapies.)

Covert sensitisation

Covert sensitisation (Cautela, 1967) is a variant of aversion therapy, which also includes elements of SD. 'Covert' refers to the fact that both the behaviour to be removed and the aversive stimulus to be associated with it are *imagined*. The patient has to visualise the events leading up to the initiation of the undesirable behaviour: just as this happens, s/he has to imagine nausea or some other aversive sensation.

'Sensitisation' is achieved by associating the undesirable act with an exceedingly disagreeable consequence (Kleinmuntz, 1980). The patient may also be instructed to rehearse an alternative 'relief' scene in which, for example, the decision not to drink is accompanied by pleasurable sensations. This is generally preferred to aversion therapy on humanitarian grounds, but is no more effective than aversion therapy (Gelder *et al.*, 1989).

Behaviour modification

Behaviour modification refers to techniques based on *operant conditioning*, developed by psychologists such as Ayllon and Azrin to build up appropriate behaviour (where it didn't previously exist), or to increase the frequency of certain responses and decrease the frequency of others.

According to Baddeley (1990), most behavioural programmes follow a broadly similar pattern involving a series of steps.

- **Step 1** Specify the behaviour to be changed. It's important to choose small, measurable, achievable goals.
- **Step 2** The goal should be stated as specifically as possible.
- **Step 3** A *baseline rate* should be measured over a period of several days, that is, how the person 'normally' behaves with respect to the selected behaviour. This may involve detailed observation, which can suggest hypotheses as to what's maintaining that behaviour.
- **Step 4** Decide on a *strategy*. For example, *selectively reinforce* non-yelling behaviour (through attention) and ensure that yelling behaviour is ignored.
- **Step 5** *Plan treatment*. It's essential that everyone coming into contact with the patient behaves in accordance with the chosen strategy.

A design that is commonly used to check the effectiveness of treatment is the *AB–AB design,* where A is the baseline condition and B is the experimental treatment. So, if treatment is working, the level of yelling should be reduced during the initial B-phase (compared with the initial A-phase), and should increase again when treatment is stopped (the second A-phase). When treatment is reintroduced (second B-phase), yelling should once more reduce.

- **Step 6** *Begin treatment.*
- **Step 7** *Monitor progress.*
- **Step 8** *Change* the programme if necessary.

Operant conditioning with special groups

Even under optimum conditions, autistic children never achieve the creative use of language and broad range of social skills of normal children (Thomas, 1985: see Chapter 40). However, Lovaas (1977) believes that many therapeutic gains can be retained at home (and even some modest improvements shown) if parents have been trained in the *shaping techniques* such as those described in Key Study 45.2.

ASK YOURSELF...

- What do you understand by the term 'shaping'?
- What's a more technical terms for shaping?
- How do you think shaping might be used to help autistic children develop language?

KEY STUDY 45.2 Shaping speech in autistic children (Lovaas *et al.*, 1967)

Lovaas *et al.* pioneered operant conditioning with autistic children who normally had little or no normal speech. They used a *shaping* technique.

- Verbal approval was paired with a piece of food whenever the child made eye contact, or merely attended to the therapist's speech or behaviour (which is also unusual for autistic children). This reinforces attention and associates a positive social gesture with food, so that verbal approval eventually becomes a conditioned reinforcer.
- The child was reinforced with food and praise whenever it made any kind of speech sound, or even tried to imitate the therapist's actions.
- Once this occurred without prompting, the therapist gradually withheld reinforcement until the child successfully imitated complete actions or uttered particular vowel or consonant sounds, then syllables, then words and, finally, combinations of words.

Sometimes, hundreds or even thousands of reinforcements were necessary before the child began to label objects appropriately or imitate simple phrases. Even when children have received extensive training, they're likely to regress if returned to a non-supportive institutional setting.

There are many striking examples of successful modification programmes with the mentally retarded, both adults and children. In one large-scale study, Matson *et al.* (1980) reported substantial improvements in the eating behaviour of profoundly impaired adults. They used peer and therapist modelling (see below), social reinforcement, verbal prompts to shape eating, the use of utensils, table manners, and so on. Reinforcers included going to meals early, and having one's own table-mat. There was a significant improvement in the treated group even four months after the end of treatment, compared with an untreated control group.

Azrin & Foxx (1971) and Foxx & Azrin (1973) produced a toilet-training 'package' in which:

- the client is taken to the toilet every half hour and given extra fluids, sweets, biscuits, praise and attention when it's used successfully
- the client is strapped into a chair for half an hour, away from other people, if they have an accident; this *isn't* a punishment procedure, but *'time out',* that is, a time away from positive reinforcement.

As with speech training in autistic children, there are problems of generalising from hospital-based improvement to the home situation. But if parents continue the programme at home, there can be short- and long-term benefits.

A form of behaviour often displayed by autistic and mentally retarded individuals is *self-mutilation* by biting, scratching, head banging, and so on, all of which can be life-threatening. This has been treated successfully by using operant techniques (e.g. Bull & LaVecchio, 1978).

The token economy

The *token economy* (TE) is based on the principle of secondary reinforcement. Tokens (secondary or conditioned reinforcers) are given for socially desirable/acceptable behaviours as they occur, and can then be exchanged ('cashed in') later on for certain 'primary' reinforcers.

The TE was introduced by Ayllon & Azrin (1968), who set aside an entire ward of a psychiatric hospital for a series of experiments in which reinforcements were provided for activities such as face-washing, teeth-brushing, dressing properly, and making beds, and withheld for withdrawn or bizarre behaviour. The participants were 44 female chronic schizophrenic patients, with an average 16 years of hospitalisation. Some screamed for long periods, some were mute, many were incontinent, and a few were assaultive. Most no longer ate with cutlery, and some buried their faces in the food.

A baseline measure was made of how often socially desirable behaviours normally occurred. They were then systematically reinforced every time the desired behaviours occurred with *plastic tokens* that could later be

exchanged for special privileges (e.g. listening to records, going to the cinema, renting a private room, extra visits to the canteen). The entire life of each patient was, as far as possible, controlled by this regime. Results showed that the patients significantly increased the frequency of the desired behaviours when they were reinforced.

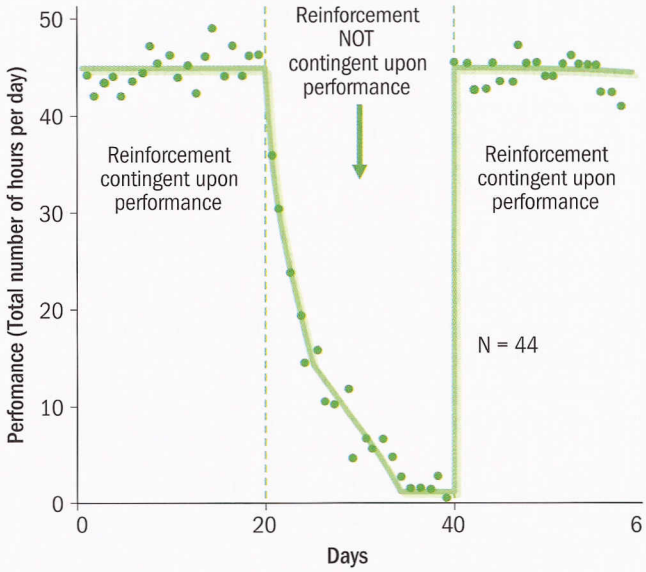


Figure 45.3 The effects of a token economy on the performance of 44 female hospitalised schizophrenics (from Ayllon & Azrin, 1968)

If the introduction of chlorpromazine and other antipsychotic drugs in the 1950s marked a revolution in psychiatry, the introduction of TE programmes during the 1960s was, in its way, equally revolutionary. This was partly because it drew attention to the ways in which nursing (and other) staff were inadvertently maintaining the psychotic, 'mad' behaviour of many chronic schizophrenics by giving them attention, thus reinforcing unwanted behaviour.

Evaluating the TE

Two main advantages of the TE are:

- tokens can be given *immediately* after some desirable behaviour occurs, thereby 'bridging' very long delays between the target response and the primary reinforcer; this is especially important when it's impractical or impossible to deliver the primary reinforcer immediately following the behaviour
- tokens make it easier to give consistent and effective reinforcers when dealing with a group of individuals.

According to Davison *et al.* (2004):

> ... These experiments have demonstrated how even markedly regressed adult hospital patients can be significantly affected by systematic manipulation of reinforcement contingencies ...

Since the 1960s, hundreds of carefully controlled experiments have shown that various psychiatric patient behaviours can be brought under control by manipulating reward and punishment contingencies. According to Holmes (1994), one of the most impressive tests of the effectiveness of the TE is a study by Paul & Lentz (1977).

KEY STUDY 45.3 A comparison of TE, milieu therapy and custodial care (Paul & Lentz, 1977)

Eighty-four chronic psychiatric patients, matched for age, gender, socio-economic status, symptoms, and length of hospitalisation, were randomly assigned to one of three treatment conditions.

Social learning/token economy

Acceptable behaviour was reinforced by giving the patients tokens, but learning took place specifically through modelling, shaping, prompting, and instructions. Inappropriate behaviour wasn't reinforced. This regime embraced all aspects of the patients' lives. Like money, the tokens were a necessity – they bought meals. They could also be used to rent better sleeping quarters (e.g. a single room cost 22 tokens), obtain passes to leave the hospital, buy recreation time (e.g. TV, piano), and various luxuries/privileges (e.g. staying up later). These all had to be 'earned'.

Milieu therapy

The entire hospital became a 'therapeutic community' (Jones, 1953), with all its ongoing activities and personnel a part of the treatment programme. Social interaction and group activities were encouraged, so that through group pressure, patients were directed towards normal functioning. They were treated as responsible human beings, and expected to participate in their own readjustment (as well as that of fellow patients), including participation in decision making about the running of the ward. Staff impressed on them their positive expectations and praised them for doing well.

Custodial care (routine hospital management)

This included the use of antipsychotic drugs. Patients were alone for 95 per cent of their waking hours, with only occasional recreational, occupational, individual and group therapies.

The study lasted for four and a half years, with an 18-month follow-up. Throughout the entire six-year period, patients were assessed at regular six-monthly intervals, using structured interviews and behavioural observation. The objectives of both the TE and milieu therapy were to teach self-care, housekeeping, communication and vocational skills, to reduce symptomatic behaviour, and to release patients into the community.

Both social learning/TE and milieu therapy reduced some symptoms (such as bizarre motor behaviours). They were also both successful in increasing interpersonal, vocational, housekeeping and self-care skills (TE being the more successful). But both were equally unsuccessful in reducing cognitive distortions (delusions, hallucinations, and incoherent speech) and hostile behaviour.

Over 10 per cent of patients in the TE and 7 per cent of those in milieu therapy were able to leave the hospital to live independently (e.g. in halfway houses), compared with none in custodial care. Those from the TE did significantly better at staying there. However, most of those who lived independently continued to manifest many signs of mental disorder, and failed to gain employment or participate in 'normal' social activities. The numbers of patients remaining on antipsychotic drugs dropped dramatically for those in both the milieu and TE groups.

According to Davison *et al.* (2004), considering how poorly these patients had been functioning before the study began, the results are extraordinary. However, since modelling and other social learning techniques were combined with the TE, the results shouldn't be accepted as demonstrating the effectiveness of the TE as such. Nevertheless:

> ... The outcome ... is not to be underestimated: chronic mental patients, those typically shut away on back wards and forgotten by society, can be resocialized and taught self-care. They can learn to behave normally enough to be discharged from mental institutions. This is a major achievement in mental health care ... (Davison *et al.*, 2004)

However, there's been very little increase in the use of TEs, despite continuing evidence of their effectiveness (Paul & Menditto, 1992).

Box 45.7 Some problems with TEs

- The control of behaviours has to be transferred from tokens to social reinforcers, both within and, ultimately, outside the hospital. The former is normally achieved by gradually 'weaning' patients off the tokens, and the latter by transferring patients to halfway houses and other community live-in arrangements. But there tends to be a high re-hospitalisation rate for such patients.
- Tokens may work by encouraging staff to observe behaviour systematically – not because the tokens act as reinforcers of the patient's behaviour (Gelder *et al.*, 1989). Indeed, Burgio *et al.* (1983) found that selectively reinforcing *staff* for verbal interaction with residents produced a reliable improvement in the residents' behaviour. As with other successful behavioural interventions, the reason for the effectiveness of TE programmes may be quite unrelated to learning theory principles (Fonagy & Higgitt, 1984). This relates to *process research* (see text below).
- *Ethical problems* arise, because it's often necessary to deprive patients of some amenity before it can be earned with tokens. If this amenity is something that the patient should have by right (e.g. food), there's clearly an ethical difficulty. With some amenities (e.g. watching TV), it's difficult to decide whether they're a right or a privilege (Gelder *et al.*, 1989).
- Ayllon and Azrin adopted the policy of giving visitors conducted tours, with the clients as guides. In some TEs, clients have the option of leaving the programme without penalty, and suggesting or negotiating changes in the contingencies used. Another precaution is to inform clients clearly of their legal and moral rights, and to instruct clients and staff to report any infringements of those rights. According to Martin & Pear (1992), the ethics of a TE will ultimately be judged on the basis of how effectively and humanely the transfer to the natural environment is carried out.
- Baddeley (1990) argues that when used in an educational setting (e.g. in a home for emotionally disturbed children), a TE can instil a highly mercenary approach to learning (TEs lead to *token learning*). For example, children may only read or indulge in any educational activity if directly rewarded for it. This may be effective within the confines of the TE itself, but will be inappropriate outside, where learning operates on a more indirect, long term, and less immediate reward system.



Custodial care: non-therapeutic, routine hospital management

COGNITIVE–BEHAVIOUR THERAPY

Model of psychological disorder

According to Mahoney (1974) and Meichenbaum (1977), many (if not most) clinical problems are best described as disorders of thought and feeling. Since behaviour is to a large extent controlled by the way we think, the most logical and effective way of trying to change maladaptive behaviour is to change the maladaptive thinking which lies behind it. Beck (1993) defines *cognitive–behaviour therapy* (CBT) as:

... the application of the cognitive model of a particular disorder with the use of a variety of techniques designed to modify the dysfunctional beliefs and faulty information processing characteristic of each disorder ...

CBT is derived from various sources, including behaviour therapy and psychoanalysis, which define and operationalise cognition in different ways. However, the attempt to change cognition (*cognitive restructuring*) is always a means to an end, that end being 'lasting changes in target emotions and behaviour' (Wessler, 1986).

Rational emotive therapy (RET) (Ellis, 1962, 1973)

Ellis argues that *irrational thoughts* are the main cause of all types of emotional distress and behaviour disorders. Irrational thinking leads to a self-defeating internal dialogue of negative self-statements, and these are seen as 'covert' behaviours, subject to the same principles of learning as overt behaviour. Phobias, for example, are linked to *catastrophising self-statements* and, as with other disorders, the aim of therapy is to replace these irrational, unreasonable beliefs and ideas with more reasonable and realistic ones.

In its simplest form, patients are told to look on the bright side, stop worrying, pull themselves together, and so on. As Walker (1984) observes, 'rational' shouldn't be taken too literally, as sometimes counterproductive thoughts and beliefs may be replaced by more positive and helpful but equally irrational ones. For instance, it's not necessarily more rational to be an optimist than a pessimist, but it's usually more productive and should be encouraged in depressed patients.

Ellis (1962) identified 11 basic irrational beliefs or ideas which tend to be emotionally self-defeating, and which are commonly associated with psychological problems. These include, 'I must be loved and accepted by absolutely everybody', and 'I must be excellent in all possible respects and never make mistakes – otherwise I'm worthless'. In RET, patients are challenged to prove that they're worthless because they make mistakes, or to say exactly how making mistakes makes one a worthless person. Patients may be explicitly directed to practise certain positive/optimistic statements, and are generally urged to 'look for the "musts" when they experience inappropriate emotions' (Wessler, 1986).

Self-instructional training (SIT) (Meichenbaum, 1977)

According to Meichenbaum, neurotic behaviour is due, at least partly, to *faulty internal dialogues* (internal speech), in which the patient is failing to self-instruct successfully. The underlying rationale for SIT is a study by Meichenbaum & Goodman (1971). Impulsive and hyperactive children were trained to administer self-instructions for tasks on which they'd previously made frequent errors, first by talking aloud, then covertly, without talking, but still moving their lips and, finally, by talking covertly without any lip movements. This 'silent speech' is the essence of verbal thought (see Chapter 34).

Patients are made aware of the maladaptive nature of their self-statements, and are then helped to develop coping skills in the form of coping self-statements, relaxation, and plans for behaviour change. For example, a patient might write down a strategy for dealing with a particular social interaction (e.g. asking someone to dance at a club) and then role-play it with a continuous commentary of self-statements before actually doing it 'for real'.

Wolpe (1978) argues that these techniques aren't very useful in cases of severe anxiety, because many strong neurotic fears are triggered by objects and situations which the patient knows are harmless – this is why phobias are irrational! So, Wolpe has used a technique called *thought stopping* (mainly with OCD patients), in which the patient is told to dwell on their obsessive thoughts and, while this is happening, the therapist shouts 'Stop!'. The patient then repeats the command out loud, and eventually repeats it subvocally (in thought only). (Covert sensitisation is a form of self-instruction or self-training: see above.)

Treatment of 'automatic thoughts' (Beck, 1963, 1967, 1987)

Beck's central idea is that depressed individuals feel as they do because their thinking is dominated by *negative schemas*. This is a tendency to see the world negatively, which is triggered whenever the person encounters new conditions that in some way resemble the conditions in which the schemas were originally learned (usually in childhood and adolescence). These negative schemas fuel and are fuelled by certain cognitive biases, which cause the person to mis-perceive reality. So:

(a) an *ineptness schema* can make depressed people expect to fail most of the time
(b) a *self-blame schema* makes them feel responsible for all misfortunes, and
(c) a *negative self-evaluation schema* constantly reminds them of their worthlessness. The main specific cognitive biases are described in Box 45.8.

Box 45.8 The main cognitive biases in Beck's theory of depression

- **Arbitrary inference:** a conclusion drawn in the absence of sufficient evidence – or any evidence at all. For example, a man concludes that he's worthless because it's raining the day he's hosting an outdoor party.
- **Selective abstraction:** a conclusion drawn on the basis of just one of many elements in a situation. For example, a worker feels worthless when a product doesn't work, even though she's only one of several people who contributed to making it.

- **Overgeneralisation:** an overall sweeping conclusion drawn on the basis of a single, perhaps trivial, event. For example, a student regards his poor performance in a single class on one particular day as final proof of his worthlessness and stupidity.
- **Magnification and minimisation:** exaggerations in evaluating performance. For example, a man believes he's completely ruined his car (*magnification*) when he sees a small scratch on the rear bumper. A woman believes herself to be worthless (*minimisation*) despite a succession of praiseworthy achievements.

(Based on Davison & Neale, 2001)

Negative schemas, together with cognitive biases or distortions, maintain the *negative triad*. This refers to negative thoughts about the self, the world and the future.

The source of such negative thoughts are logical errors based on faulty 'data' and, once negative thinking has been identified, it can be replaced by collecting evidence against it. Accordingly, Beck sees the client as a colleague of the therapist who researches verifiable reality (Wessler, 1986).

For example, if a client expresses the negative thought, 'I'm a poor father because my children aren't better disciplined', Beck would take the second part of the statement and seek factual evidence about its truth. He'd also focus on the evaluative conclusion that one is a poor father because one's children sometimes misbehave. In these and other ways, clients are trained to distance themselves from things, to be more objective, to distinguish fact from fiction, and fact from evaluation, to see things in proportion, and not to see things in such extreme terms. Beck's cognitive therapy is less confrontational than RET.

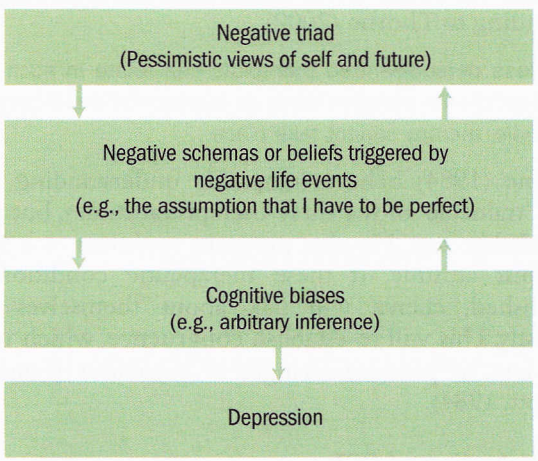
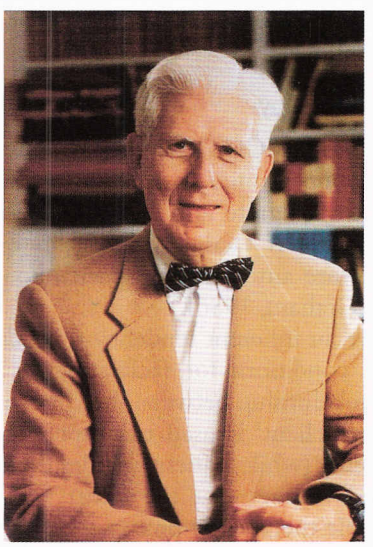


Figure 45.4 The interrelationships between different kinds of cognitions in Beck's theory of depression

An evaluation of Beck's approach

- It's generally agreed that Beck's has been the most influential of the cognitive models of depression (that is, the view that depression is caused by how people *think*) (Champion, 2000), although it's also been criticised for underemphasising social factors (Champion & Power, 1995).
- Freud saw people as victims of their passions. The id is the dominant part of the personality, and the ego is able to exert little control over our feelings. But in Beck's theory, the cause–effect relationship is *reversed*. Our emotional reactions are essentially a function of how we *construe* the world (interpret and predict it). Depressed people see themselves as victims, and Beck sees them as victims of their own illogical self-judgements.
- The evidence initially came from Beck's clinical observations (Beck, 1967). Further support comes from various sources, including self-report questionnaires, and laboratory studies of memory and other cognitive processes (Davison & Neale, 2001).
- Perhaps the greatest challenge facing any cognitive theory of depression is to show that depressed people's thoughts are the *cause* of their depression rather than the effect. Many experimental studies have shown that a person's mood can be influenced by how s/he construes events. But manipulating people's affect (mood or feeling) has also been shown to change their thinking. Beck (and others) have found that depression and certain kinds of thinking are *correlated*. But a specific causal relationship cannot be determined from such data (as with all correlations). Probably, the relationship works *both* ways. In recent years, Beck himself has come to this more *bidirectional* position. There's certainly no unequivocal support for the claim that negative thinking causes depression (Davison & Neale, 2001).



Aaron T. Beck (born 1921)

◎ Beck (1993) has reviewed the evidence concerning the effectiveness of his form of CBT in the treatment not just of unipolar depression (for which it was originally designed), but also generalised anxiety disorder, panic disorder and eating disorders. These *outcome studies* show very clearly that CBT is highly effective (see below, pages 829–832). CBT is also being used in the treatment of drug abuse, bipolar disorder, patients with cancer, HIV, OCD, PTSD and schizophrenia, and it's also being applied in group and family therapy settings. Beck (1993) believes that:

> The very broad application of the theory and strategies bolsters the claim of cognitive therapy as a robust system of psychotherapy ...

CLIENT-CENTRED THERAPY (CCT) (ROGERS, 1959)

Model of psychological disorder

As we saw when discussing Rogers' self theory in Chapter 42, when a person is aware of a lack of congruence between their experience and self-concept, threat, anxiety or depression is experienced. Because of our need for positive regard, we may behave in ways which are discordant with the values of our self, and feeling threatened, anxious, or depressed is the price we pay. Denial and distortion are used as defences against these unpleasant feelings, and as a result our self-concept becomes increasingly incongruent with reality. This, in turn, increases anxiety and makes the need for defences all the greater, creating a vicious circle.

Threat, anxiety, or depression may interfere with the person's life in a less serious (neurotic) way, or it may be so great as to defy denial and distortion, leading to the disintegration of personality (psychosis). However, Rogers regards individuals as unique, and human personality is so complex that no diagnostic labelling of persons can ever be fully justified. Indeed, Rogers rejected all diagnostic labelling.

The aims of therapy

Client-centred therapy (CCT) is a process whereby individuals have the opportunity to reorganise their subjective world, so as to integrate and actualise the self. The key process, therefore, is facilitation of the experience of becoming a more autonomous, spontaneous, and confident person (Graham, 1986).

People have an inherent tendency towards *self-actualisation,* but the conditions for facilitating its development reside in the relationship between the client and the therapist. The word 'client' is used to emphasise the person's self-responsibility (while 'patient' implies the opposite), and 'client-centred' implies that the client is encouraged to direct the whole therapeutic process – any changes which occur during therapy are brought about by the client.

The therapeutic process

The therapist's main task is to create a therapeutic atmosphere in which clients can become fully integrated again. This can be achieved only if clients *reduce their conditions of worth,* and *increase their unconditional positive self-regard.* The therapist's job is to create a situation in which clients can change themselves, and this is aided by an emotionally warm, accepting, understanding, and non-evaluative relationship in which the person is free from threat and has the freedom to be 'the self that he really is' (Graham, 1986).

There are three particularly significant qualities to the relationship, or therapist attitudes, which must be effectively communicated to the client.

Box 45.9 The three therapist attitudes central to CCT

Genuineness (authenticity or congruence): The therapist must show him/herself to be a real person, with feelings which should be expressed where appropriate. The client needs to feel that the therapist is emotionally involved, and not hiding behind a facade of professional impersonality: the therapist must be 'transparent'. This is the most important of the three qualities or attitudes.

Unconditional positive regard: The therapist must show complete acceptance of, and regard for, the client as a separate person in his/her own right. The therapist must deeply and genuinely care for clients as they are now, in a non-judgemental way.

Empathic understanding: The therapist must try to enter the client's inner world through genuine, attentive listening, which involves intense concentration. This may involve restating what the client says as a way of trying to clarify its emotional significance (rather than its verbal content). This requires the therapist to be sensitive to what's currently going on in the client's mind, and to meanings just below the level of awareness.

According to Thorne (2002):

> ... unless person-centred therapists can relate in such a way that their clients perceive them as trustworthy and dependable *as people,* therapy cannot take place ...

Thorne (1984) believes empathic understanding is the most 'trainable' of the three therapist attitudes, but is also remarkably rare. He also proposes *tenderness* as a fourth therapist attitude. If these therapeutic conditions are established, clients will talk about themselves more honestly. This will re-establish congruence, which will be sufficient to produce changes in behaviour (Fonagy & Higgitt, 1984).

An evaluation of CCT

◎ Unlike most other humanistic therapists, Rogers has attempted to validate his therapy empirically (and has

encouraged others to do so). A form of assessment used by Rogers is the *Q-sort,* which comprises a number of cards with statements referring to the self (e.g. 'I am a domineering person'). The client is asked to arrange them in a series of ten piles, ranging from 'very characteristic of me' to 'not at all characteristic of me' (describing the *self-image*), and the process is repeated so as to describe the *ideal self* (see Chapter 33). The two Q-sorts are then correlated to determine the discrepancy between self-image and ideal self – the lower the correlations, the greater the discrepancy. The whole procedure is repeated at various intervals during the course of therapy.

- One way of assessing the importance of the three qualities or therapist attitudes is to train people to do so, and to give them transcripts or tape-recordings of therapy sessions which they then have to rate. Truax & Mitchell (1971) found that therapists who were rated high were much more likely to be associated with desirable changes in their clients, and low-rated therapists actually made their clients' conditions *worse.* But others have found that the therapist's personal characteristics are likely to be no more important than any specific techniques used.
- Thorne (2002) would totally dispute this last claim, arguing that the limitations of CCT are a reflection of the personal limitations of the approach. However, he also argues that CCT has been in danger of selling itself short, because of its traditional emphasis on the here and now, and also because of its heavy reliance on verbal interaction. Rogers' own daughter, Natalie, has pioneered *person-centred expressive therapy* (Rogers, 1993), which incorporates movement, art, music, pottery and creative writing, as well as other essentially non-verbal channels of expression (see Box 45.1).

AN EVALUATION OF THERAPY: IS IT EFFECTIVE?

This deceptively simple-sounding question really comprises two interrelated questions:

1. does it work? This is related to *outcome research.*
2. how does it work? This is related to *process research.*

Each question, in turn, comprises several other overlapping questions. *Outcome questions* include the following:

- is psychotherapy (in general) effective?
- is any one kind of psychotherapy more effective than another?
- what constitutes a satisfactory outcome?
- how should change be measured (and for how long after the end of treatment)?
- how much and what kind of change is necessary for a judgement of improvement to be made?

Process questions include the following:

- what are the necessary components of effective therapy?
- what are the mechanisms by which change is brought about (what are the 'active ingredients')?
- are different therapies effective because of the particular techniques and tools they use, or are there common factors that apply to all therapies?

Despite the close connection between them, researchers tend to focus on either outcome or process questions. Psychotherapy research began by concentrating on outcome, in the form of Eysenck's much-cited 1952 review article, in which he challenged what had up to that time been taken for granted about the effectiveness of psychoanalysis.

KEY STUDY 45.4 The effectiveness of psychotherapy (Eysenck, 1952)

- Eysenck reviewed five studies of the effectiveness of psychoanalysis, and 19 studies of the effectiveness of 'eclectic' (mixed) psychotherapy.
- He concluded that only 44 per cent of psychoanalytic patients and 64 per cent of those who received the 'mixed' therapy improved.
- However, since roughly 66 per cent of patients improve without any treatment (*spontaneous remission*), Eysenck concluded that psychoanalysis in particular, and psychotherapy in general, simply don't work – they achieve nothing which wouldn't have happened anyway without therapy!

Outcome research

According to Eysenck (1992), the *outcome problem* had never been properly addressed by clinical psychologists prior to his article, which showed *only* that the available evidence wasn't sufficient to prove that psychoanalysis (and psychotherapy in general) was instrumental in bringing about recovery. It *didn't* suggest that it was ineffective (which is how many others interpreted his conclusions). Nevertheless, if it can be shown that psychoanalysis does *no better* than placebo treatments (see below) or no treatment at all (which the 1952 article showed):

> ... then clearly the theory on which it is based was wrong. Similarly, if there were no positive effects of psychoanalysis as a therapy, then it would be completely unethical to apply this method to patients, to charge them money for such treatment, or to train therapists in these unsuccessful methods ... (Eysenck, 1992)

By 1960, Eysenck was arguing that behaviour therapy is the only kind of therapy worth rational consideration and he inspired an enormous amount of research on therapy outcomes (Oatley, 1984).

A re-assessment of Eysenck's conclusions

- If the many patients who drop out of psychoanalysis are excluded from the 44 per cent quoted by Eysenck (they cannot legitimately be counted as 'failures' or 'not cured'), the figure rises to 66 per cent.
- Bergin (1971) reviewed some of the studies included in Eysenck's review and concluded that, by choosing different criteria of 'improvement', the success rate of psychoanalysis could be raised to 83 per cent. He also cited studies which showed only a 30 per cent spontaneous remission rate.
- One of the two studies which Eysenck used to establish his spontaneous remission rate of 66 per cent was conducted by Landis (1938). Landis compared patients who'd received psychotherapy ('experimental group') with a control group who'd been hospitalised for 'neurosis' in state mental hospitals. Landis himself pointed out a number of differences between his psychotherapy group and the hospital patient controls, concluding that these differences

  all argue against the acceptance of [this] figure... as a truly satisfactory baseline ...

- Bergin & Lambert (1978) reviewed 17 studies of untreated 'neurotics' and found a median spontaneous remission rate of 43 per cent. They also found that the rate of spontaneous remission varies a great deal depending on the disorder: generalised anxiety and depression, for example, are much more likely to 'cure themselves' than phobias or OCD. Similarly, Rachman & Wilson (1980) argue that:

  ... the early assumption of uniformity of spontaneous remission rates among different disorders is increasingly difficult to defend.

- Garfield (1992) argues that both the quantity and quality of psychotherapy research have increased since the time of Eysenck's 1952 article, especially since the 1970s, but Eysenck doesn't refer to this in his 1992 article (see quote above).

Other outcome research

A review by Luborsky *et al.* (1975) concluded that all types of therapy are equally effective. Smith & Glass (1977) reviewed 400 studies of a wide variety of therapies (including psychodynamic, CCT, SD, and eclectic) and concluded that all were more effective than no treatment. For example, the 'average' client who'd received therapy scored more favourably on the outcome measures than 75 per cent of those in the untreated control groups.

Smith *et al.* (1980) extended the 1977 study to include 475 studies (an estimated 75 per cent of the published literature). Strict criteria for accepting a study included the comparison of a treated group (given a specified form of therapy) with a second group (drawn from the same population) that were either given no therapy, put on a waiting list, or given some alternative form of therapy. As with the 1977 results, the effectiveness of therapy was shown to be highly significant: the average client was better off than 80 per cent of the control groups on the outcome measures. Although different therapies had different kinds of effects, overall:

Different types of psychotherapy (verbal or behavioural, psychodynamic, client-centred, or systematic desensitisation) do not produce different types or degrees of benefit. (Smith *et al.*, 1980)

Box 45.10 Meta-analysis

- A distinctive feature of the Smith & Glass (1977) and Smith *et al.* (1980) studies is their use of *meta-analysis* (MA), a 'study of studies'. Lilienfeld (1995) defines MA as:

  ... a procedure for aggregating and averaging the results of a large number of studies. Unlike the 'voting' method, meta-analysis allows researchers to consider the magnitude of findings and yield an overall measure of effect size – that is, an index of the magnitude of the effects of a treatment ... averaged across all studies ...

- *Effect size* is essentially an indicator of the extent to which people who receive psychotherapy improve relative to those who don't: the greater the difference between these two groups, the greater the effect size. The 'voting method' (a term coined by Smith and Glass) simply involves adding up all the studies that support the effectiveness of psychotherapy and all those that don't – a result is counted as a 'hit' provided the difference between the two totals is statistically significant. But lumping together all the positive findings and all the negative findings obscures statistically significant results that are very large and those that are very small. As a result, it provides only a crude and often misleading summary of a body of literature (Lilienfeld, 1995). All outcome studies prior to Smith & Glass (1977) used the 'voting method'.
- Another advantage of MA is that it allows researchers to examine whether certain variables are correlated with effect size, such as how experienced the therapist is and the age of clients. In this way, they can determine not only the overall effectiveness of psychotherapy (*outcome research*), but also what factors, if any, influence its effectiveness (*process research*).

Some problems with outcome research

ASK YOURSELF...

- Can you think of any criticisms of the *categorical approach* to diagnosing mental disorders that would seriously undermine any outcome study? (See Chapter 43.)

- Outcome research in general presupposes that it's possible to distinguish reliably and validly between mental disorders; in other words, schizophrenia, depression, and so on, are objectively separate mental illnesses (as are physical diseases). We saw in Chapters 43 and 44 that this is a matter of debate and disagreement (especially between psychiatrists and psychologists).
- Related to this is the widespread use of DSM categories in outcome research, so that patients are treated essentially the same (they're *homogeneous*). This is a *nomothetic* approach, while in practice, therapy adopts a more *idiographic* approach – treatment is tailored to the particular needs and characteristics of particular patients.

CRITICAL DISCUSSION 45.4 Manual research vs actual clinical practice

- Outcome research uses therapist *manuals*. These are detailed guides on how to conduct a particular therapy, stipulating specific procedures to be followed at different stages of treatment. This has become the norm in outcome research.
- Specifying what therapists are to do via a manual in a controlled study (*randomised clinical trial*/RCT) allows someone reading a study to know what actually happened to patients in a given experimental condition.
- But do the results from manual-based studies generalise to the actual practice of psychotherapy outside the constraints of the RCT (Davison *et al.*, 2004)? For example, most therapists describe themselves as *eclectic* (i.e. they draw on different approaches and techniques). This suggests that controlled studies of *specific* techniques and treatments are limited in what they can tell us about the nature and outcomes of therapy *as actually practised* (Lambert & Bergin, 1994). If most practising therapists rarely behave strictly in line with a particular theoretical orientation, RCTs can tell us little about the effectiveness of psychotherapy available to patients who aren't participating in such studies (Davison *et al.*, 2004).
- As Marzillier (2004) puts it, the very procedures designed to improve the research distance it from the realities of clinical work.
- The use of manuals is also designed to minimise the influence of differences between different therapists. But even in RCTs there's great variability between therapists (Teyber & McClure, 2000), and, in general, therapist differences are *greater* than treatment differences (Beutler, 1997). In CCT, therapist qualities are paramount, but also more generally, we mustn't let the focus on treatment variables blind us to the importance of therapist empathy, sensitivity and ability to inspire trust (Davison *et al.*, 2004).

Process research

ASK YOURSELF...

- Based on the earlier discussion of specific treatment methods, try to formulate some questions relevant to process research (i.e. *how* the methods work).

- Do relaxation and graded exposure to the feared object/situation make SD an effective means of removing phobias?
- Are tokens an essential part of the TE, which successfully reduces the psychotic behaviour of schizophrenic patients?
- Are the three therapist attitudes necessary if clients are to develop positive self-regard and to achieve congruence?

These are all questions about *process*. According to Kazdin & Wilcoxin (1976), the crucial ingredients of therapy (whatever techniques are involved) are:

- the patient is influenced to expect success, and
- the patient's self-concept changes, whereby s/he comes to believe (through supervised practice) that the previously feared object or situation can be coped with.

The patient's expectations of success relate to the crucial and controversial issue of the *placebo effect*.

The placebo effect

As we saw when discussing antidepressant drugs (see Box 45.4, page 812), a *placebo* denotes an inactive/inert substance, designed to take account of the psychological (as opposed to pharmacological) influences on physiological change (such as the expectation of improvement). So, in drug trials, the placebo condition is the *control condition*.

However, in psychotherapy, the expectancy is part of the treatment (Mair, 1992). Is it possible to devise a placebo control in psychotherapy research which is inactive in a way that's equivalent to taking a sugar pill? Even non-placebo controls (such as delayed treatment or no treatment conditions) will produce expectations specific to that particular condition (e.g. disappointment and rejection respectively) (Barkham & Shapiro, 1992).

If client expectations of success are one of the main 'active ingredients' or components involved in psychotherapy, then if a placebo has the capacity to inspire client expectations, making psychotherapy–placebo comparisons may underestimate the actual effectiveness of psychotherapy (Lilienfeld, 1995). Indeed, according to Frank (1989), if therapy effects don't exceed those of placebos (a conclusion drawn by, for example, Prioleau *et al.*, 1983), this is because the placebo is psychotherapy:

> As a symbolic communication that combats demoralisation by inspiring the patient's hopes for relief, administration of a

> placebo is a form of psychotherapy. It is therefore not surprising that placebos can provide marked relief in patients who seek psychotherapy. (Mair, 1989, quoted in Mair, 1992)

The role of non-specific factors

Cordray & Bootzin (1983) argue that one of the major ingredients involved in psychotherapy's effectiveness is the *non-specific factors* shared by most, or even all, therapies. The main proponent of this view is Frank (1973), who argues that psychotherapy has much in common with faith healing and other similar techniques. Far from being a derogatory comparison, Frank believes that the success of psychotherapy can be traced largely or entirely to four non-specific factors/components.

Box 45.11 Frank's (1973) four non-specific factors/components involved in therapy

According to Frank, all psychotherapies:

- prescribe clearly delineated roles for therapist and client, with the former defined as an 'expert' possessing unique healing skills. This raises the client's hopes that help will be forthcoming;
- involve settings designed to be associated with the alleviation of psychological distress (a 'designated place of healing'), e.g. carpeted rooms with scholarly books and journals and prominently displayed diplomas;
- provide a convincing theoretical rationale for making sense of the client's problems. This instils a sense of confidence in clients and reassures them that their problems aren't incomprehensible or unique;
- include therapeutic rituals (prescribed tasks or procedures, such as SD and free association) that further enhance the client's faith in the therapist and the therapeutic rationale. These are akin to the ceremonial rituals of faith healers; they cultivate the impression that something deeply significant and mysterious is taking place.

Above all, these factors help to combat demoralisation, the universal malady that brings people to therapy. Most individuals who voluntarily seek treatment experience low self-esteem, despair, helplessness, alienation, and a profound sense of incompetence. All psychotherapies alleviate demoralisation by raising hopes and expectations of improvement, and by instilling feelings of confidence and self-worth (Mair, 1992).

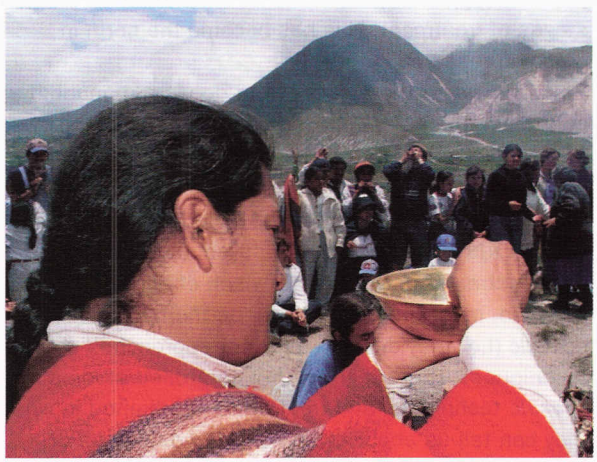
Bandura (1977a) has integrated a number of findings into the proposal that the central element in psychological therapy is the cognitive change towards *self-efficacy*, the 'conviction that one can successfully execute a behaviour to produce a specified outcome' (see Chapter 35). This is brought about best through actual experience in facing previously feared or avoided situations.

The results of studies like those of Smith & Glass (1977) and Smith *et al.* (1980), which claimed that differences in the effectiveness of various therapies are negligible, support Frank's argument. But other outcome studies have shown that the more active, structured, directive therapies work best (at least for certain types of disorder): they're more heavily 'saturated' with Frank's non-specific factors than are other psychotherapies (Lilienfeld, 1995).

CONCLUSIONS

The whole concept of 'cure' is highly complex, and is itself defined differently from different theoretical and therapeutic perspectives (see Critical Discussion 45.2). The crux of Eysenck's (1952) review is how the effectiveness of psychotherapy should be assessed. He used Denker's (1946) criteria, namely:

- return to work and ability to carry on well in economic adjustments for at least five years
- complaint of no further or very slight difficulties, and
- making successful social adjustments.



During the Equinox ceremony in Ecuador, the indigenous shaman holds a golden pot, through which the Great Spirit is called, showing up like fire to purify the soul

These are all fairly tangible indicators of improvement. Even more so is the behaviour therapist's criterion that cure is achieved when patients no longer manifest the original maladaptive behaviour (e.g. the fear of spiders is eliminated). If these more stringent (or more easily measured) criteria of actual behaviour change are required before the therapist can be viewed as successful, then behaviour therapists do seem to be more effective than psychoanalysts or humanistic therapists (with cognitive approaches falling in between the two) (Rachman & Wilson, 1980; Shapiro & Shapiro, 1982).

But psychoanalytic therapists may answer the question 'Does therapy work?' by saying it's misleading, like asking whether friendship 'works'. It's an activity that people take part in, which is important to them, affects, moves, even transforms them (Oatley, 1984).

Because Eysenck is interested in comparing recovery rates (measured statistically), his assessment of the effects of therapy is purely *quantitative*. Psychoanalysts and those practising CCT are likely to be much more concerned with the *qualitative* aspects of therapy (such as the nature of the therapeutic process, and the role of the relationship between client and therapist). There are different kinds of questions one can ask when trying to assess the effects of psychotherapy. These approaches aren't mutually exclusive, however. The *interaction* between experimental research (where hypotheses can be tested scientifically) and therapy (where they can be tried out clinically) can influence theory development and therapeutic practices (Marzillier, 2004).

According to Lilienfeld (1995), the question 'Is psychotherapy effective?', although remarkably complex in some respects, may actually be too simple in others. As Paul (1966) observes, what we need to ask is 'What treatment, by whom, is most effective for this individual, with that specific problem, and under which set of circumstances?' This is to do with matching client, therapy and setting and, according to Wilson & Barkham (1994), is a question that still haunts psychotherapy research and disturbs therapists.

CHAPTER SUMMARY

- Both **clinical** and **counselling psychology** adopt the **scientist–practitioner model** of helping, but they've been more influenced by behavioural and humanistic approaches respectively.
- Treatments and therapies differ according to whether they're **somatic** or **psychological**, **directive** or **non-directive**, **individual** or **group**.
- The term '**psychotherapy**' is sometimes used to refer to all **non-somatic** treatments, and sometimes to **psychodynamic approaches/insight therapies**.
- Major groups of **antidepressant drugs** include **MAOIs**, **tricyclics** and **SSRIs**, including fluoxetine (Prozac).
- Chlordiazepoxide (Librium) and diazepam (Valium) are widely prescribed **anxiolytics**. They belong to the **benzodiazepines**.
- **Antipsychotic drugs** (**major tranquillisers/neuroleptics**) revolutionised the treatment of schizophrenia and other psychotic disorders. But they only treat the **positive symptoms** of schizophrenia, and cause serious side-effects.
- **Electroconvulsive therapy** (ECT) is now used mainly with depressive patients. While it's probably more effective than antidepressants, its benefits are only short-term, and it may cause long-term cognitive and emotional deficits.
- Although modern **stereotactic procedures** are much more precise than earlier **prefrontal lobotomies/leucotomies**, the use of **psychosurgery** remains extremely controversial. In the UK, it's used only as a last resort.
- According to Freud, **neuroses** involve the use of defences in an attempt to combat anxiety, but they're self-defeating, creating their own distress.
- The aims of **psychoanalysis** include providing insight. The analyst remains anonymous, which facilitates **transference**. **Interpreting** transference is a distinctive feature of psychoanalysis, as is the analyst's **counter-transference**.
- The client's **resistance** to interpretations of transference must itself be interpreted. **Free association** and **dream interpretation** are other major techniques.
- **Psychodynamic psychotherapy** represents a modified form of psychoanalysis. **Brief focal therapy** deals with a specific area of difficulty in a much shorter period of time than classical psychoanalysis.
- **Behaviour therapy** and **modification** refer to techniques based on **classical** and **operant conditioning** respectively. Both see adaptive and maladaptive behaviour as being acquired in the same way, and both reject the medical model.
- Eysenck and Rachman see the case of Little Albert as a model of how all **phobias** are acquired. But this can only account for the **initial learning** of phobias (through classical conditioning), not for their **persistence** (which occurs through negative reinforcement).
- According to Wolpe, the key principle in **systematic desensitisation** (SD) is **reciprocal inhibition**. It appears that neither relaxation nor the use of a hierarchy is necessary, and the 'active ingredient' seems to be **exposure** to the feared object/situation.
- **Implosion** (implosive therapy) is supplemented by the therapist's **stimulus augmentation**. Both implosion and **flooding** represent forms of '**forced reality testing**'. Flooding is thought to be the most effective of all treatments for phobias.
- **Aversion therapy** is particularly controversial when used with homosexuals. **Covert sensitisation** is aversion therapy that takes place in the patient's imagination, and is preferable on humanitarian grounds.
- Lovaas pioneered the use of **operant conditioning** with autistic children in an attempt to teach them to use speech. **Behaviour modification** has been used successfully with mentally retarded adults and children, both to reduce self-mutilation and to teach toilet training.
- Ayllon and Azrin pioneered the **token economy** (TE), based on the principle of **secondary reinforcement. Tokens** may be effective because of the way they change **staff** behaviour and attitudes, which is contrary to what learning theory principles would predict. TEs also raise some very important **ethical** issues.
- **Cognitive–behaviour therapy** (CBT) is based on the view that clinical disorders involve **faulty thoughts/cognitions**, which then produce maladaptive behaviour. **Cognitive restructuring** is a means to the end of changing emotions and behaviour.

- According to Ellis's **rational emotive therapy** (RET), **irrational thoughts** are the main cause of all types of emotional/behaviour disorders. Meichenbaum's **self-instructional training** (SIT) claims that neurotic behaviour is due to **faulty internal dialogues**.
- Beck's treatment of '**automatic thoughts**' aims to help clients understand the **cognitive triad** of depression. Therapy involves training in being more objective, separating fact from evaluation, and seeing things in less extreme ways.
- According to Rogers, threat, anxiety, and depression are responses to a **lack of congruence** between our experience and self-concept.
- The aim of **client-centred therapy** (CCT) is to allow the natural tendency towards **self-actualisation** to develop through the therapist's **genuineness/authenticity**, **unconditional positive regard** and **empathic understanding**.
- Evaluating the **effectiveness of therapy** involves both **outcome** and **process research**. Eysenck's landmark article claimed that recovery from neurosis following psychotherapy is no greater than the rate of **spontaneous remission**.
- Both the quantity and quality of subsequent outcome research have increased, showing psychodynamic therapies in a much more favourable light. One important improvement is the use of **meta-analysis**.
- Unlike drug trials, in psychotherapy it may be impossible to devise an **inactive placebo control**. If therapy effects don't exceed those of placebos, this is because the placebo itself raises hopes of improvement.
- Frank identifies four **non-specific factors** responsible for the success of psychotherapy. They help to combat demoralisation, the common factor shared by all those who seek therapeutic help. Related to this is Bandura's concept of **self-efficacy**.

Links with other topics/chapters

- Clinical psychologists are the largest single group of psychologists in the UK and the USA. The psychologist as *counsellor* and as *agent for change* are two of the seven major skills used by applied psychologists (Hartley & Branthwaite, 2000) (Chapter 1).
- The change toward family and marital/couple therapy seems to have been inspired by Laing's family interaction model of schizophrenia, which has been applied to less 'serious' problems that commonly occur in families and between partners (Chapter 44).
- *Alcoholics Anonymous* (AA), and other similar self-help organisations for drug abusers, victims of abuse, and so on, use group therapy (Chapter 8).
- One explanation of the placebo effect involves the release of brain *endorphins* (Chapter 4). It's also relevant to understanding *compliance with medication* among heart-attack patients (Chapter 12).
- Double-blind designs are used to prevent *experimenter effects/bias* (Chapter 3).
- The ego defence mechanisms form an important part of Freud's theory of 'normal' personality (Chapter 42), as well as his account of phobias and other neurotic disorders. This demonstrates the *dimensional* (as opposed to the *categorical*) *approach* to mental disorder (Chapter 43).
- Freud's concept of free association is relevant to the discussion about *free will and determinism* (Chapter 49).
- *Heterosexism,* along with *sexism* and *androcentrism* are forms of *bias* that permeate mainstream psychology (Chapter 47) and help to make it less than completely *objective* (Chapter 3).
- Criticisms of the use of therapy manuals in outcome research can be considered in terms of *internal vs external validity.* The better controlled the studies (thus increasing internal validity), the lower the external validity (relevance to actual therapy situations). This is a problem for psychological research in general (Chapter 3).

Who commits crime?
- Age and offending
- Predictors of long-term offending
- Crime and gender
  - *Women and crime*
  - *Men and crime*

Theories of criminal behaviour
- Personality and criminality
  - *Eysenck's personality theory*
  - *Can APD be treated?*

Offender profiling
- A brief history
- What exactly is OP?
- Current approaches
  - *The American approach*
  - *The British approach*
- An evaluation of profiling

The treatment of offenders
- Situational crime prevention
- Punitive prison regimes
- Treatment programmes
  - *Does treatment work?*

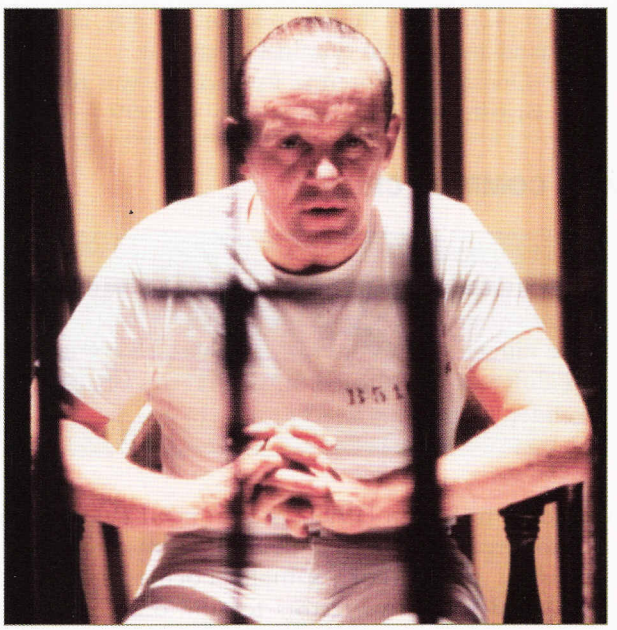
Chapter summary

Links with other topics/chapters

46

APPLICATION

CRIMINOLOGICAL PSYCHOLOGY



INTRODUCTION AND OVERVIEW

Not surprisingly, many of the questions we've discussed about the causes of behaviour have also been applied to crime and criminal behaviour. Psychology is just one of the several disciplines contributing to *criminology* (others being law, sociology, anthropology, economics, geography, politics, statistics, and psychiatry), and *criminological* (or *forensic*) *psychology* attempts to apply psychological principles to the criminal justice system (Harrower, 1998).

Defined in this way, the present chapter clearly overlaps with Chapter 21, which looked specifically at aspects of *cognitive psychology* (in particular memory and face recognition) in relation to the law. The two chapters are complementary. By discussing research into eyewitness testimony and face recognition, we were looking in Chapter 21 at one half of the 'crime–victim' equation. Here, the focus is on the person committing the crime, rather than on the witness (although witnesses aren't necessarily victims).

Because crime is a form of *social deviancy*, definitions and perceptions of crime overlap with the criteria discussed in Chapter 43 for defining psychological abnormality. Also, one theory of criminal behaviour holds that it reflects a particular type of personality disorder (see Chapter 44). Discussion of moral development (see Chapter 35), gender (Chapter 36), adolescence (Chapter 37), and personality (Chapter 42) are all highly relevant to any attempt to understand and explain criminal behaviour.

The Division of Forensic Psychology was recognised by the British Psychological Society in 1999.

WHO COMMITS CRIME?

ASK YOURSELF...

- Think of a criminal and what comes to mind (i.e. what's your *stereotype* of a criminal)?
- Are different types of crime likely to be committed by different kinds of criminal (in terms of age, gender, social-class background etc.)?

According to Hollin (1999), the strongest evidence relevant to predicting who'll commit crime comes from *longitudinal studies*. For example, Loeber *et al.* (1995) investigated predictive factors for the onset of conduct disorder, itself an established risk factor for later delinquency, in 177 males aged 8–17. They were followed up for 6 years, and data were collected on a range of psychological, psychiatric and social factors. Parental substance abuse, low socio-economic status (SES) and the child's resistance to discipline were important factors in eventual progression to diagnosed conduct disorder.

Longitudinal studies have helped illuminate our understanding of many criminological issues, including the relationship between age and crime, predictors of juvenile delinquency, and patterns of adult crime.

Age and offending

Delinquency rates for both males and females consistently increase from about age 8, peaking at 16–17, then rapidly declining into the late teens and early twenties. But is this due to increasing *prevalence* (more young people committing crimes) or a rise in *incidence* (young offenders committing more offences as they get older)? While these are difficult to separate, it's generally agreed that the rise in offending rates with age reflect increasing prevalence (Hollin, 1999).

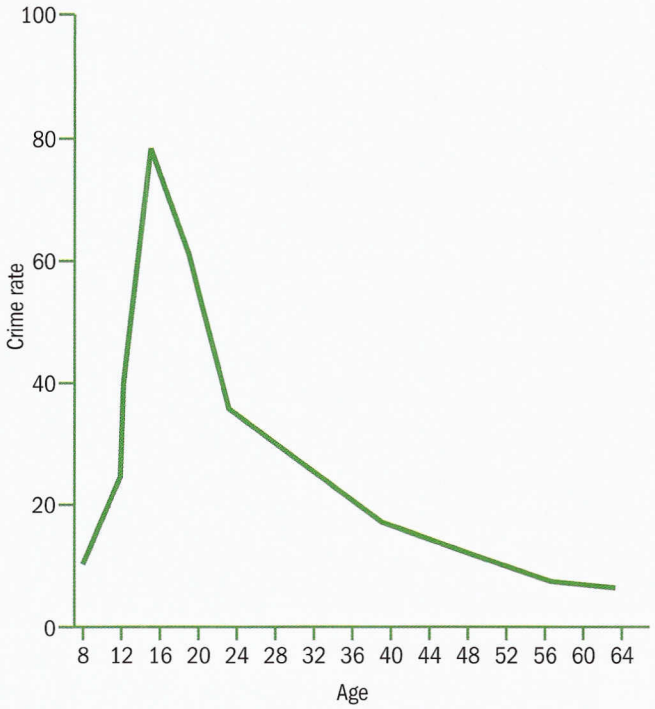


Figure 46.1 The relationship between age and crime (from Hollin, 1999)



A defaced, grafittied statue of Winston Churchill

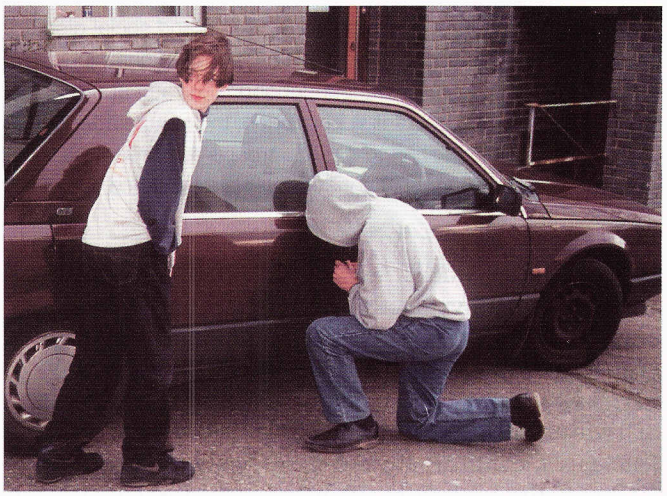
'Crime rate' refers to prevalence, in terms of the percentage of people of specific ages who commit offences. As Figure 46.1 shows, about 20 per cent of 12-year-olds, 80 per cent of 16-year-olds, 20 per cent of 36-year-olds, and 8 per cent of 52-year-olds commit crime.

Although juveniles commit a lot of crime, most is relatively trivial, including a large number of *status offences* (which apply only to young people, such as truancy, under-age drinking, driving a motor vehicle under age) as opposed to *index* (or *notifiable*) *offences* (serious offences, such as murder, rape and sexual assault, burglary, arson and robbery, which are criminal acts regardless of age). Young people commit both types, but status offences are much more common (Hollin, 1999).

The age–crime relationship also shows that most crime is 'adolescence-limited' (Moffitt, 1993); that is, most young people 'grow out' of delinquency by the time they're 18. So, what is it about being a teenager that makes criminal behaviour so much more likely than at any other age?

Box 46.1 Risk-taking and delinquency

- According to Hendry (1999), risk-taking has been one of the attributes of youth since adolescence became recognised as a distinct period of the lifespan. But it's an ill-defined concept. Is it part of the psychological make-up of youth, a necessary rite of passage en route to the acquisition of adult skills and self-esteem?
- Whatever the answer to these questions, risk-taking and delinquency can be seen as interrelated.
- The desire to identify with the peer group, especially in mid-adolescence (Coleman & Hendry, 1990) requires adherence to particular types of behaviour and roles, which imposes a group conformity even when antisocial activities are involved. Paradoxically, many juvenile crimes may reflect underlying values that are generally approved and encouraged by society (such as acquiring material possessions). 'Inappropriate' behaviours (such as drug and alcohol use, smoking, and sexual behaviour) may be 'used' to identify with adult patterns of behaviour (Hendry, 1999).
- Boys comprise the biggest proportion of juvenile offenders and enter the criminal justice system earlier than girls, and many juvenile crimes are *gendered* (such as joy-riding, a very 'male' crime). In the USA at least, young men are much more likely than young women to have several sexual partners, use alcohol and marijuana, drive recklessly, and engage in physically violent behaviour. They're consequently much more likely to die as a result of accidental injuries, homicides and suicides than young women. While black female teenagers are about four times more likely to be murdered than their white counterparts, black males are about eight times more likely to die this way than theirs (Sonenstein, 1999).



Car theft: a very male crime

Predictors of long-term offending

According to Hollin (1999), the most widely cited longitudinal study in the UK is the Cambridge Study in Delinquent Development. This began in 1961 with 411 males, aged eight to nine, and is still in progress, with over 90 per cent of the sample intact as they pass into their 40s. They've been repeatedly tested and interviewed throughout this period, and parents, peers, and teachers have also been interviewed. A vast amount and range of data have been gathered, dealing with parental child-rearing practices, economic factors, school behaviour and much more. Summary reports have been published by Farrington & West (1990) and Farrington (1995).

About 20 per cent were actually convicted as juveniles, 33 per cent were convicted up to the age of 25, and self-reported delinquency matched official records reasonably well.

KEY STUDY 46.1 The Cambridge Study in Delinquent Development (Farrington & West, 1990; Farrington, 1995)

The most important distinguishing characteristics, observed at age eight to ten, of later delinquents (measured by convictions and self-report) fell into six main categories:

- antisocial childhood behaviour, including troublesomeness in school, dishonesty and aggression
- hyperactivity/impulsivity/attention-deficit, including poor concentration, restlessness, daring and psychomotor impulsivity
- low intelligence and poor academic record
- family criminal record, including convicted parents, delinquent older siblings and siblings with behavioural problems
- family poverty, including low family income, large family size and poor housing
- poor parental child-rearing behaviour, including harsh and authoritarian discipline, poor supervision, parental conflict and separation from parents.

The intensity and severity of these personal and social disadvantages in childhood appear to be predictive of chronic offending in adolescence and adulthood. Over and above these factors, the age of first conviction, the school attended, employment, and moving to a more prosperous area were all related to patterns of criminal activity in adolescence.

In two independent studies, Elander *et al.* (2000a) confirmed that hyperactivity is a significant risk factor in boys, and Elander *et al.* (2000b) found that late-onset criminals (first conviction after age 22) were likely to have had a history of childhood and adolescent antisocial behaviour, major mental illness in adulthood, or both. Late-onset criminals are also more likely to be female.

By 18, the long-term offenders had adopted a lifestyle characterised by heavy drinking, sexual promiscuity, drug use, and minor crimes involving cars or group violence and vandalism. They were highly unlikely to have any formal qualifications, had unskilled manual jobs, and were often unemployed.

By 32, they were unlikely to be home-owners (and to be residentially mobile), had low-paid jobs, tended to have physically assaulted their partners and used a wide range of drugs. They had an extensive list of fines, probation and prison sentences. Overall, this was a socially dysfunctional existence. They committed more crimes while unemployed, and these were for financial gain – theft, burglary and fraud.

ASK YOURSELF...

- What bearing do you think close relationships have on offending?
- Might they be a *protective* factor? (See Chapter 32.)

The formation of close relationships in early adulthood was related to a *decrease* in offending: those who were married were less likely to offend than those who weren't, provided their partners weren't convicted offenders. But compared with non-offenders, they were more likely to have divorced or separated from their wives and children, and to have more conflict with their wives/partners (see Chapter 32).

However, there was still considerable overlap between offenders and non-offenders: not all the convicted men displayed these characteristics. Neither a disadvantaged background nor 'social failure' (Farrington, 1990) inevitably leads to crime, but it massively increases the risk of criminal behaviour (the 'good boys from bad backgrounds' phenomenon: Farrington & West, 1990).

Crime and gender

According to Heidensohn (1996):

Sex differences in criminality are so sustained and so marked as to be, perhaps, the most significant feature of recorded crime.

Lyon (1998) observes that 84 per cent of recorded crime is committed by men, who comprise 96 per cent of the prison population in England and Wales. One-third of men born in 1953 had been convicted of an offence by the age of 30. Similarly, Harrower (1998) maintains that:

Probably the most significant feature of both recorded and self-reported crime is that more males than females commit offences, particularly violent crimes, in spite of claims that women are becoming more violent in the 1990s ... or that, because of their inherent deviousness, they have always been more criminal but have simply been able to conceal it ...

Until recently, the 'maleness' of crime was taken as an accepted fact. In contrast to the 'ordinariness' of male crime, the few early studies of female offenders focused on their extraordinariness, as odd or ill creatures deviating from the norm (Lyon, 1998). In the 1970s, feminist perspectives began to develop in criminology, and the neglect of gender (especially women) was highlighted.

Women and crime

According to Lloyd (1995) in a book called *Doubly Deviant, Doubly Damned:*

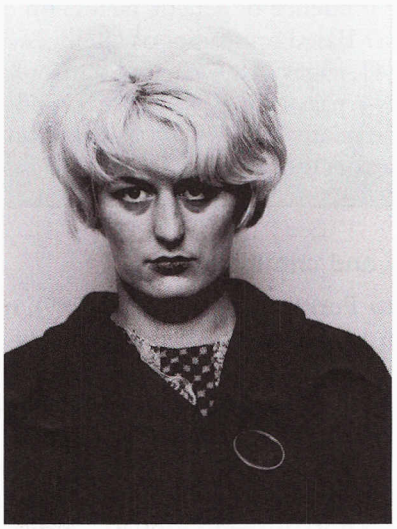
... when women commit violent crimes they are seen to have breached two laws: the law of the land which forbids violence and natural law which says women are passive carers not active aggressors.

CRITICAL DISCUSSION 46.1 Women and violence

- Throughout the years of heated debate concerning Myra Hindley's release from prison, there seems to have been an implicit assumption that to have committed her crimes, she must be especially evil because *('ordinary') women don't commit (are incapable of) such crimes.*
- Pearson (1998, in *When She Was Bad: How Women Get Away With Murder)* tries to demolish the cherished myth that women aren't naturally aggressive. Pearson (a woman) blames feminists and society as a whole for refusing to see women as dangerous and destructive. We cannot bring ourselves to recognise the reality of female aggression and violence. So we find excuses for it, such as battered women syndrome, or premenstrual tension, or we see female killers (including Hindley and Rose West) as always junior accomplices of violent men.
- According to Smith (1998), the myth that Pearson tries to demolish tells only half the story. There's also a terror that women are innately *more cruel* than men, a sentiment summed up in Kipling's 'the female of the species is more deadly than the male'.
- It's been suggested that the criminal justice system is more 'chivalrous' (i.e. lenient) towards females, so that the gender difference in violent crime isn't in fact as large as official figures would make it seem (Harrower,

1998: see text below). But at the same time, there have been numerous cases in Britain of men killing their wives for trivial reasons, being found guilty of manslaughter and walking free after 5–6 years in prison, while women who kill their husbands tend to be convicted of murder and receive a life sentence (Smith, 1998).

- This injustice has led to the overturning of verdicts in celebrated cases like that of Sara Thornton, who was initially convicted of her husband's murder. She successfully argued that the court should have taken into account the cumulative effect of her husband's violence towards her, and she was released from jail.



Myra Hindley, who died in prison in 2002

Gender bias in the criminal justice system

According to Lyon (1998), there's considerable evidence that men and women are treated differently by the criminal justice system. Ideas and attitudes about what constitutes 'normal' male and female behaviour affect how female offenders are treated. Lyon gives three examples.

1. Hedderman & Gelsthorpe (1997) examined 13,000 cases of men and women convicted of shoplifting, violence and drug offences during 1991. For virtually every type of offence, women are treated more leniently than men. They also interviewed 200 magistrates about what they thought were the main influences on their decision-making. Women were considerably more likely than men to be discharged even when circumstances appeared to be entirely comparable. Magistrates were reluctant to fine women, especially those with dependent children, were more likely to define women offenders as troubled rather than troublesome, and to see their crimes as motivated by need rather than greed.
2. A high proportion of female offenders have themselves been the victims of crime (see Critical Discussion 46.1). Belknap (1996) found that prior victimisation, prostitution, running away and drug offences, and subsequent imprisonment were interrelated. Morris *et al.* (1994) surveyed large numbers of female prisoners in England and Wales, and almost half reported either being physically abused as children or the victims of domestic violence as adults. Another third reported sexual abuse. Similar findings were reported by HM Chief Inspector of Prisons (1997).

Some very young women become involved in prostitution through relationships with adults who offer accommodation and introduction to drug habits. The Children's Society (Lyon & Coleman, 1996) estimated that at least 5000 children under 16 are used for prostitution in Britain, and the number of girls of 16 or under who were convicted (1989–1994) rose by almost 80 per cent.

3. The most common female crimes are theft and property-related crimes, with a rising incidence of drug-related offences and crimes of violence against the person. Women are more likely to be in prison for the first time (about 70 per cent are 'first timers'), and are less likely to re-offend on release than males (under 50 per cent of female young offenders re-offend within two years, compared with 80 per cent of male young offenders).

Female prisoners are more likely to suffer from depression, to self-harm, abuse drugs or alcohol, seek medical help, and be prescribed (and often depend on) medication, compared with male prisoners. They're also more likely to be imprisoned far from home, and to be adversely affected by custody. Most have dependent children, for whom many retain considerable responsibility. Women in prison are also more likely to be charged with breaking prison rules and other discipline-related offences.

Women (especially black women) appear to face greater discrimination than men on release from prison in relation to finding housing and employment. Because they constitute a tiny minority of the prison population as a whole (4 per cent), women offenders may be regarded as unnatural or pathologically deviant (Lyon, 1998).

Men and crime

Feminist criminologists have helped to promote the view that 'masculinity' itself should be examined more closely in order to understand why so many young men commit offences – and are also the victims of crime (see Box 46.1). While at one time 'gender' was a 'code word' for women and femininity, it now refers to men and masculinity. Because of men's domination of all aspects of crime and the criminal justice system, it's only recently that their gender and the construction of their masculinity have been considered valid areas for study in their own right.

ASK YOURSELF...

- Why is it that males are much more likely to commit crimes than females? (See Chapters 2, 36 and 50.)

As Wilson & Herrnstein (1985) point out:

> Crime is an activity disproportionately carried out by young men living in large cities. There are old criminals, and female ones, and rural and small town ones, but to a much greater degree than would be expected by chance, criminals are young urban males.

According to Lyon (1998), two major explanations of the male domination of crime are *biological determinism* and *social constructionism*. Are men born to take risks, challenge authority, become violent and commit crimes? Or do they learn these behaviours, and is crime the context in which their masculine identity develops and is affirmed?

Over 80 per cent of all offenders are male, and this pattern is repeated internationally. So what is it about the cultural history and social construction of *masculinity* which ensures that so many young males become involved in crime (Harrower, 1998)? According to Lyon (1998), a new research focus on masculinity and crime seeks to challenge popular images of young men as yobs and thugs, and to question their 'natural 'involvement in offending. She also argues that:

> ... gender and crime can only be fully explored within the context of culture and society taking account of key variables such as race, class, family, economic circumstances and individual differences.

THEORIES OF CRIMINAL BEHAVIOUR

If, as we've seen, not all males commit crime and some females do, then there must be factors over and above gender that make people more likely engage in this sort of behaviour. Similarly, not all boys growing up in disadvantaged circumstances become adolescent or adult offenders. So, although being an urban male significantly increases your chances of committing crime, psychologists want to know what other influences are involved. In Hollin's (1997) terms:

> ... while the findings of the longitudinal surveys are important in describing the conditions associated with the onset of criminal behaviour, they also demand an explanation of how they cause delinquent behaviour. In other words, we still await a grand theory to explain the process by which the interaction between the young person and his or her environmental circumstances culminate in criminal behaviour.

In the meantime, we can draw on existing psychological theories, which may be applicable to criminal behaviour, without being theories of criminal behaviour as such.

ASK YOURSELF...

- How would Freud explain criminal behaviour? (See Chapter 35, pages 602–605.)
- How would Kohlberg explain criminal behaviour? (See Chapter 35, pages 609–613.)
- How would *social learning theorists* (such as Bandura) explain criminal behaviour? (See Chapter 29, pages 501–506, and Chapter 35, pages 615–618.)
- How could Bowlby's *maternal deprivation hypothesis* help to explain criminal behaviour? (See Chapter 32, page 551.)
- What methods would *behaviour geneticists* use to assess the influence of genetic factors on criminal behaviour? Based on studies of intelligence (see Chapter 41, pages 718–722) and schizophrenia (see Chapter 44, pages 796–798), what would you expect the relative influence of genetic and environmental factors to be?

Personality and criminality

According to Furnham & Heaven (1999), many studies have shown conclusively that personality factors are related to a wide range of antisocial, criminal, and delinquent behaviours. The vast majority of this research has been *cross-sectional* and has looked for links between criminal behaviour and the personality dimensions originally investigated by Eysenck, namely introversion–extroversion (E), neuroticism–emotional stability (N), and psychoticism (P).

Eysenck's personality theory

E, N and conditionability

ASK YOURSELF...

- How do you think Eysenck would explain criminal behaviour? (See Chapter 42, pages 736–738.)

For Eysenck, the criminal is a neurotic extrovert (someone who scores high on both N and E). N is linked to crime through *anxiety* (Eysenck & Eysenck 1970). High anxiety functions very much like a drive, which multiplies with habit, so someone who engages in delinquent behaviour is likely to persist in that behaviour if they're also high N scorers. The high E scorer is stimulus-hungry, engages in thrill-enhancing behaviours, and is more difficult to *condition*. Because 'conscience' is nothing more than a series of conditioned anxiety responses, the neurotic extrovert is *undersocialised* and has an underdeveloped conscience.

Cochrane (1974) reviewed a number of studies in which prisoners and control groups were given EPI questionnaires. Although prisoners are generally higher on N, they're *not* higher on E and, indeed, several studies have shown criminals to be *less* extroverted (and so more

introverted) than controls. However, Eysenck (1974) responded to these findings by claiming that the EPI largely measures the 'sociability' component of extroversion rather than the 'impulsivity' component, which is more relevant to conditionability. This represents a change to his earlier position, in which he equated 'sociability' (the capacity for socialisation) and 'conditionability'. Cochrane concludes that, at least in its original form, the theory has been discredited.

Even if prisoners were uniformly more extroverted and neurotic than non-prisoners, it could still be possible to explain these differences by reference to factors other than personality. For example, offenders who are caught (or found guilty) might differ in certain significant ways from those who aren't (or who aren't found guilty), such as the nature of the offence and the 'offender's' social status.

Farrington (1992) argues that the exact role of N depends on whether we're referring to 'official' or self-reported delinquency. 'Official' offenders are most often characterised by high N and low E scores (agreeing with Cochrane's findings), whereas self-reported offenders are the reverse: low N and high E. However, both forms of delinquency are related to high P (see below).

Heather (1976) argues that:

> The notion that such a complex and meaningful social phenomenon as crime can ever be explained by appealing to the activity of individual nervous systems would be laughable were it not so insidious.

What makes the theory insidious, he says, is that it 'places the fault inside individuals rather than in the social system where it almost always belongs'.

Psychoticism and crime

P is more strongly correlated with crime than either N or E (Eysenck & Eysenck, 1970, 1985; Eysenck & Gudjonsson, 1989). According to Furnham & Heaven (1999), it's well established that high P scorers are also aggressive, uncaring, troublesome, inhumane, insensitive to others' needs and feelings, tend to not experience guilt, prefer strange and unusual things, and appear foolhardy (Eysenck & Eysenck, 1970). Howarth (1986) found that high P scorers are impulsive, tend to be un-cooperative, rigid, and lacking sensitivity, and Claridge (1981) found a close association between P and overt aggressiveness and impulsivity.

Not surprisingly, in view of all these findings, P scores are well able to discriminate between criminals and non-criminals (Eysenck & Gudjonsson, 1989).

KEY STUDY 46.2 A longitudinal study of delinquency and personality (Heaven, 1996b)

- Heaven studied 282 14-year-olds over a two-year period, measuring delinquency, E, P and self-esteem.
- The best longitudinal predictor of later delinquency was P, with E and low self-esteem both having little impact.
- Although the importance of P supports previous findings, the overall effect was quite small: the three factors accounted for just over 16 per cent of the variance in delinquency scores when first measured, and only 6 per cent two years later. So, over time, the impact of personality on the maintenance of delinquency scores seems to have been rather limited (Furnham & Heaven, 1999).
- Heaven suggests that factors (dimensions or *domains*) such as E are too broad and insensitive to capture the full subtlety of developmental change. Lower-order factors (or *facets*), such as excitement-seeking, trust, impulsiveness, and venturesomeness might capture these subtleties better. This conclusion was supported by a separate study involving delinquency and the 'big five' personality factors (Heaven, 1996a: see Chapter 42, page 742).

According to Furnham & Heaven (1999):

> Clearly much more work needs to be done on assessing the interaction between personality and external factors such as family life, peer pressure, group norms and so on. Indeed, evidence also suggests that physiological factors (e.g. heart rate) may be implicated in the personality–behaviour link ... This kind of research needs to be undertaken increasingly if we are to achieve a much more comprehensive understanding of the psychology of criminality.

Antisocial personality disorder (psychopathy)

Definitions and classification

'Psychopathy' was first included in the 1959 Mental Health Act, which defined it as:

> ... a persistent disorder or disability of mind (whether or not including subnormality of intelligence) which results in abnormally aggressive or seriously irresponsible conduct on the part of the patient and requires or is susceptible to medical treatment.

According to the Mental Health Act 1983:

> Psychopathy means a persistent disorder or disability of mind (whether or not including significant impairment of intelligence) which results in abnormally aggressive or seriously irresponsible conduct on the part of the person concerned.

Because it was felt strongly that those with psychopathic disorder should only be compulsorily detained if there was a reasonable prospect of response to treatment, the diagnostic criteria in the definition were separated (in the 1983 Act) from the susceptibility to treatment clause (Prins, 1995). These are contained in other sections of the Act, which made compulsory admission for treatment available only if it can be stated that medical treatment is likely to alleviate or prevent a deterioration in the individual's condition. According to Prins:

> This was an important proviso because it recognised the difficulties involved in treating psychopaths, but kept the door open

> for therapeutic optimism ... It also serves to emphasise the fact that the term psychopathic disorder should be used sparingly and not as a 'dustbin' label for those clients or patients who are merely difficult, un-cooperative or unlikeable ...

A working group was set up by the Department of Health and the Home Office (1992) to review the treatment options for individuals with psychopathic disorder, their appropriate location, and arrangements for treatment. The 1994 report called for considerably more research into the nature of the disorder, its classification and management.

The report also recommended replacing the term 'psychopathic disorder' with 'personality disorder'. In fact, DSM–IV-TR uses the term '*antisocial personality disorder*' (APD), and ICD–10 refers to '*dissocial personality disorder*' (DPD).

Box 46.2 The major characteristics of antisocial personality disorder (APD)

Individuals diagnosed with APD:

- lack tender feelings and concern for others' feelings, so that relationships are shallow and unstable; sex is purely 'functional' (if male) and they're highly promiscuous
- appear to have no family loyalty and commit their crimes alone; they're basically loners
- have superficial charm and are often socially skilled; their charm can be very disarming and enables them to manipulate and exploit others for their own gain
- behave callously, as in inflicting pain or degradation or acting cruelly towards others
- act violently towards their marriage partners, and their children, whom they may also neglect, resulting in separation and divorce
- are impulsive and fail to strive consistently towards a goal, lacking a purpose in life; this may be reflected in an unstable employment record
- have low tolerance of frustration and a tendency towards violence, which often causes repeated criminal offences; this may begin with petty acts of delinquency, but progresses to callous, violent crimes; their lack of guilt and failure to learn from experience result in behaviour that persists despite serious consequences and legal penalties
- they commit a disproportionate number of violent crimes.

(Based on Gelder *et al.*, 1999; Prins, 1995)

According to Hart & Hare (1996), 50–80 per cent of adult male prison inmates meet the DSM criteria for APD. But Mitchell & Blair (2000) argue that:

> Unless we desire to label almost all individuals who engage in antisocial behaviour as presenting with a psychiatric disorder, we must consider these diagnoses to be unsatisfactory.



Fred and Rosemary West, husband and wife serial killers

Hare has developed an alternative, arguably more successful, method for identifying individuals whose antisocial behaviour may reflect an actual disorder. This is the *Revised Psychopathy Checklist* (PCL-R: Hare, 1991), which measures two distinct but correlated factors:

- *factor 1* – affective and interpersonal characteristics, including superficial charm, pathological lying, manipulation, lack of empathy, shallow affect and lack of guilt
- *factor 2* – chronic and versatile antisocial lifestyle, including proneness to boredom, parasitic lifestyle, impulsivity, juvenile delinquency and violation of release conditions.

Essentially, the psychopathic individual is someone with an emotional disorder who also has a high risk of antisocial behaviour.

PCL–R has proved very reliable and is very useful in risk assessment. For example, within 3 years of release, 80 per cent of those judged to be psychopathic (based on PCL–R) had violated the conditions of their release, compared with just 25 per cent of the non-psychopaths. A meta-analytic study by Hemphill *et al.* (1998) found that psychopathic offenders were three times more likely to re-offend and four times more likely to re-offend violently within a year of release, compared with non-psychopathic offenders.

What causes APD?

Display of the full disorder seems to involve a complex interaction between social environment and biological predispositions. In particular, social environment (such as SES) influences factor 2, while factor 1 is unrelated to SES. This suggests that biological make-up determines whether individuals show emotional difficulties. But these emotional factors are only *risk factors:* an adverse social environment provides the conditions needed for the disorder to develop (Mitchell & Blair, 2000).

ASK YOURSELF...

- Which explanation of *schizophrenia* mirrors this account of APD? (See Chapter 44, page 798.)

Like other forms of criminality (see Key Study 46.1), parental antisocial attitudes, inconsistent discipline, physical punishment, broken homes and childhood separations all predict high APD scores in adolescence (Forth, 1995). However, the quality of parenting doesn't influence the probability of conduct disorders in children who display the emotional difficulties associated with APD – but they do in most children (Wootton *et al.*, 1997).

Box 46.3 Emotional processing in APD individuals

The two main explanations of how emotional processing differs in APD individuals and 'normals' are (a) abnormalities in the experience of fear, and (b) a fundamental inability to empathise.

- As proposed by Eysenck (see text above), socialisation is achieved through *fear conditioning*. Normally, individuals learn to avoid antisocial behaviour because they're 'frightened' of the consequences. Those with impaired fear cannot be socialised in this way, so they don't learn the usual avoidance responses. However, much of the literature fails to support punishment as an effective means of socialisation, stressing instead the importance of *empathy induction*.
- Sad, and possibly fearful, expressions may serve a similar function in humans to submissive postures (*appeasement gestures*) in non-humans (Blair, 1995). APD individuals are less sensitive, specifically, to others' sadness and fear (as opposed to expressions of anger, for example), and so are more difficult to socialise. They don't seem to feel the same aversion to the thought of other people's pain as do 'normal' individuals.

The brain and APD

It appears that the *amygdala* functions atypically from an early age in people with APD. It's long been known that the amygdala plays a crucial role in the processing of emotion, especially fear. Just like people with APD, normal humans and non-humans suffering damage to this area don't show normal *fear conditioning* (Spence, 2004: see Box 46.3) or *startle reflex potentiation/priming* (LeDoux, 1998). The amygdala has also been shown to be involved in human emotional response to sad facial expressions (Blair *et al.*, 1999). But this response is absent in individuals with APD.

KEY STUDY 46.3 Brain abnormalities in murderers (Raine *et al.*, 1997)

- Raine *et al.* wanted to provide direct evidence for the claim that murderers pleading not guilty by reason of insanity (NGRI) have brain dysfunction.
- Using PET scans, glucose metabolism (GM) was measured in a variety of brain regions and structures while participants engaged in a continuous performance challenge task. (The significance of GM is that glucose is the principal type of fuel used by neurons when transmitting information. So, the *lower* the GM, the *less* the activity in any particular part of the brain).
- The participants were 41 murderers pleading NGRI and controls matched for age and sex. Based on previous research (with both violent offenders and non-violent controls), Raine *et al.* expected to find differences between the two groups only in specific brain areas.
- As far as *cortical* areas are concerned, the murderers were expected to show *lower* GM in the *prefrontal cortex* (PFC), the *superior parietal gyrus* and the *left angular gyrus* (also an area within the parietal lobe). This prediction was supported. Also as expected, *no* differences were found in the *temporal lobe* or the *cingulate*.
- As far as *subcortical areas* are concerned, the murderers compared with the controls showed reduced GM in the *corpus callosum* and they also showed *abnormal asymmetries* in the *amygdala, thalamus* and the *medial temporal lobe* (including the *hippocampus*). This means that the murderers showed a bias towards increased *right-hemisphere* activity. Also as expected, there were *no* differences found in the *basal ganglia, midbrain* or *cerebellum*.

Raine *et al.* suggest that a bias towards activity in the right hemisphere might mean that processing of negative emotion (such as anger and aggression) might be subject to less inhibition from the left hemisphere. In other words, those emotions would be less controlled. Lower than normal activity in the PFC, parietal cortex and corpus callosum suggests a deficit in the integration of information needed to modify and inhibit behaviour. For example, increased blood flow to the PFC usually occurs when people are engaged in planning some future behaviour. People with PFC damage are often unable to plan ahead, and live in the 'here and now', controlled by currently physically present stimuli and situations (Luria, 1973). Abnormalities in the hippocampus and amygdala suggest deficiency in forming and utilising emotionally coloured perceptions and memories (Toates, 2001).

It's likely that at least some of the murderers in the Raine *et al.* study would be diagnosed as having APD. In a later study, Raine *et al.* (2000) used MRI to study the brains of 21 volunteers with APD. They were found to have 11 per cent less prefrontal grey matter than those without APD, the first evidence of a structural brain deficit in APD.

CRITICAL DISCUSSION 46.2 What should be done with potential criminals?

ASK YOURSELF...

- What conclusions can we draw from Raine *et al.*'s findings?

- If it can be demonstrated that people with APD have a brain disorder, then isn't it reasonable to blame their violent behaviour on the brain deficit, absolving the offender of blame and responsibility ('He couldn't help himself – his relative lack of grey matter in his PFC prevented him from controlling his behaviour as normal people can')? This is obviously relevant to the NGRI plea made by the 41 murderers.
- But all we can safely conclude from Raine *et al.*'s study is that certain brain abnormalities are *correlated* with certain types of violent behaviour – *not* that any differences in brain activity actually *cause* the violent behaviour. It's possible that developing violent tendencies actually changes the function of certain brain areas, rather than vice-versa. Indeed, Raine *et al.* themselves suggest that both the brain abnormalities and the violent behaviour could be the result of one or more social, psychological, cultural or situational factors.
- Advances in neuroscience make it increasingly possible to identify people with the same neurological abnormalities as the violent criminal but *who haven't yet offended.* Should such people be removed from society and put in psychiatric 'quarantine' to protect themselves and potential victims (Spence, 2004)? Many in the USA are calling for the screening of potential violent criminals (Gibbs, 1995), and the idea has already been mooted by the UK government in proposals for a new Mental Health Act. If passed, psychiatrists may be called upon to detain people judged to be at risk of committing violent crimes.

ASK YOURSELF...

- What do you think about this proposal?
- Even if the science is reliable, is it ethically acceptable?

- Spence (2004) regards this as a disturbing prospect, not least because of the difficulty in predicting how much threat any particular individual poses.
- Spence cites a study claiming that to prevent *one* violent act over the course of a year, *six* potential offenders would have to be detained for the rest of their lives:

... As well as infringing the liberty of innocent people, this would clearly be a waste of public resources. Far from keeping potential killers off the street, the introduction of psychiatric quarantine would demonise the innocent and probably deter those with neurological abnormalities from seeking medical help ... (Spence, 2004).

Can APD be treated?

Controversy surrounding APD rivals that which has always surrounded schizophrenia, and raises some of the same fundamental issues, such as reliability and validity (see Chapter 44). According to Smith (2000), 'Personality disorder is surely the greyest of grey areas', and the diagnosis, far from showing the way to treatment, is in fact extremely unhelpful for nurses and patients alike. Believing that patients have a personality disorder can excuse us from trying to establish meaningful and helpful interactions with them.

While the general consensus is that APD – and personality disorder in general – is notoriously resistant to treatment, schizophrenia, for example, was also once thought to be untreatable. Mitchell & Blair (2000) are confident that research in the near future may allow us to treat APD too.

CRITICAL DISCUSSION 46.3 Do suicide bombers have APD?

- According to Silke (2002), there are many myths surrounding terrorists and terrorism. Surely one of the most common, though, is that terrorists in general, and perhaps suicide-bombers in particular, are crazed fanatics, psychopaths (i.e. they have APD), who are completely immune to the suffering of their victims (making the terrorists homicidal or suicidal maniacs).
- It's comforting to think that suicide terrorists are different from the rest of us, either by virtue of a personality (and related brain) disorder, or because they are poor and ignorant, with little prospect of a decent future and are driven to act by unbearable political oppression and religious fanaticism (usually Islamic) (Bond, 2004). Although there are many cases which suggest that terrorists *do* possess a degree of callousness and fanaticism not usually found in 'normal' populations, these assumptions are wrong on almost every count.



Reem Raiyshi, the first 'Martyr Mother' – a Palestinian suicide bomber who killed four Israelis in Gaza in 2004, leaving behind two young sons

- Recent research by psychologists and anthropologists suggests that suicide bombers are no less rational, no less sane, no worse educated, no poorer and no more religious than anyone else, and have none of the risk factors normally associated with suicide, such as depression and history of attempted suicides, schizophrenia or substance abuse (Bond, 2004).
- The link with religion is complicated, because most Islamic terrorist groups use religious propaganda (largely the promise of paradise) to prepare recruits for suicide missions. But suicide terrorism isn't exclusive either to religious groups or Islamic culture. For example, leading perpetrators are the Tamil Tigers, a Marxist-Leninist group who come from Hindu families but are themselves hostile to religion. There were also the Japanese kamikaze pilots who flew their planes into enemy ships during the Second World War.
- Suicide terrorism is an *organisational* phenomenon (not the act of a crazed individual). The decision to engage in it is political and strategic, and the aim is always to coerce a government into withdrawing from territory the group considers its homeland, sometimes by attacking fellow countrymen seen to be supporting them (as in ongoing attacks against police stations in Iraq).
- Against this background of a sense of injustice and persecution, the move from being a 'disaffected individual' to a 'violent extremist' is usually facilitated by a catalyst (trigger) event. For example, the shooting (captured on television) by Israeli soldiers of a father and his 12-year-old son as they cowered behind a water barrel in September 2000 at Netzarim, triggered a dramatic resurgence in Palestinian–Israeli conflict.
- Most suicide bombers have had at least one relative or close friend killed, maimed or abused at the hands of enemies. They join terrorist groups in an angry and vengeful frame of mind, already intent on taking part in suicide attacks (Silke, 2002).
- Although there's some evidence that suicide bombers are more 'marginal' people, more influenced by the group, more vulnerable, fragile, and narrow-minded:

> *... researchers believe that in the vast majority of cases, individual psychology is not the determining factor ... All you need, it seems, is a peculiar mix of social, cultural and political conditions for a group to make the decision. After that, it could be anyone, school boys and mothers included ... (Bond, 2004)*

OFFENDER PROFILING

ASK YOURSELF...

- What does offender profiling mean?
- Can you give any examples – fictional or real?

CASE STUDY 46.1: Adrian Babb, serial rapist

- One Sunday afternoon in June 1987, a 75-year-old woman was returning to her flat in a tower block. As she entered the lift, a young man stepped in with her. Once the lift door had closed, he pinned her to the wall and forced her to the rooftop. There he raped her.
- A few months later, Canter, a criminological psychologist, was given details of this and a number of related assaults, all against elderly and often frail victims in tower blocks in the same area of Birmingham. The information indicated a small area of the city in which the offender was likely to be living, his domestic circumstances and likely criminal record. It also pointed out his lack of experience in committing crimes, and the consequent likelihood that he'd have left forensic evidence at one or more of the crime scenes.
- One of the principles on which *offender profiling* is based is that the details of exactly how the crime was committed (the stock-in-trade of detectives) is fundamental – there are many ways of raping and killing. The common themes of aggressive control and violent assault can be played out with many variations. For example, this serial rapist responded to aspects of his victims' discomfort. When one victim complained of the cold concrete on her bare flesh, he put some of the clothing he'd removed from her on the floor beneath her. This was typical of his style of assault. By contrast, other rapists delight in demeaning and degrading their victims.
- These details suggested that he'd be known as helpful and considerate by those who didn't know of his violent assaults. He turned out to be Adrian Babb, a well-regarded, 20-year-old swimming pool attendant. His fingerprint was found at the scene of one of his crimes, he pleaded guilty to seven rapes, and was sentenced to 16 years in prison.

(Based on Canter, 1994a)

According to Harrower (2000), *offender profiling* (or *criminal personality, psychological,* or *behaviour profiling*) is seen as the sexy speciality of forensic psychology largely as a result of Fitz (Robbie Coltrane) in *Cracker.* But the poetic licence allowed in that TV series hasn't been particularly helpful to psychology as a discipline.

A brief history

Harrower (1998) traces what's now called offender profiling (OP) to 1888, when a police surgeon (Thomas Bond) compiled a detailed description of Jack the Ripper. During World War II, Walter Langer, a psychiatrist, was asked to compile a profile of Hitler by the Office of Strategic Studies. He constructed a psychodynamic personality profile, which took considerable account of Hitler's parents' influence on him, especially his mother. The aim was to provide sufficient insight into

his personality to allow an interrogation strategy to be developed should he be captured. He accurately predicted that Hitler would commit suicide if he faced defeat.

According to Brown (2000), OP began when the police and a psychologist, James Brussel, collaborated in apprehending a serial bomber in New York during the 1950s.

CASE STUDY 46.2 The 'mad bomber' (Brussel, 1968)

- Brussel was asked to profile the kind of person who could be capable of carrying out the bombings. He produced a remarkably accurate profile, deriving his characteristics from deductions based on crime scene data and the psychodynamic interpretation of letters written by the bomber and slashes left on the underside of theatre seats (where the bombs were secreted).
- For example, the letters were written in a stilted English, suggesting a grammatical style reminiscent of Eastern European immigrants. These groups had settled mainly in Connecticut. The duration and single-mindedness of the attacks suggested an obsessive and conformist personality.
- George Metesky, Slavic by birth, was eventually arrested and charged, following investigative leads suggested by the profile. He was in his early fifties, living in Connecticut with two unmarried sisters. At the time of his arrest, he was wearing a conventional double-breasted suit, obsessively buttoned up.

(Based on Brown, 2000)

Further development of OP was undertaken by the FBI Behavioural Science Unit during the 1980s. In the UK, interest in OP developed sharply following the Peter Sutcliffe ('Yorkshire Ripper') case. This involved the setting up of sophisticated computer-based retrieval systems. Now, all good detectives operate through their own 'computer bases' (their brains), enabling them to form pictures based on stored experience (Prins, 1995: see below).



Robbie Coltrane in *Cracker*. But forensic psychology isn't all it's cracked up to be

What exactly is OP?

According to Copson (1996), there's no universally accepted definition of OP. It's really a 'term of convenience' covering techniques in which the behaviour shown in a crime is used to draw inferences about the likely offender. For Turco (1993), OP involves:

> ... the preparation of a biographical 'sketch' gathered from information taken at a crime scene, from the personal history and habits of a victim, and integrating this with known psychological theory.

The resulting sketch can be used by police officers to reduce their list of suspects, or to offer a new line of enquiry. Traditionally, the only clues noted at crime scenes tended to be 'hard' evidence (such as blood stains). But OP also allows recognition of other, less visible clues, such as choice of victim, location, nature of the assault, what's said or not said to the victim, and so on (Harrower, 1998: see Case Studies 46.1 and 46.2). According to Harrower:

> The overall aim of profiling is to narrow the field of investigation, drawing inferences about the offender's motivation and personality from evidence left at the crime scene ...

OP is most useful when the scene reflects psychopathology, such as sadistic assaults. 90 per cent of profiling involves murder and rape, although it's also used in arson, burglary, robbery, obscene phone calls and the new crime of stalking (see Box 46.5, page 848).

Current approaches

A distinction is commonly made between the American and British approaches (Brown, 2000; Harrower, 1998).

The American approach

In 1979, FBI investigators began interviewing a growing number of imprisoned serial killers and sex murderers (including Charles Manson and Ted Bundy). The 36 who were interviewed were classified as *organised* (24) or *disorganised* (12). The former planned their crimes, the victims were targeted, and the element of control was important. They were of average intelligence, socially and sexually competent, and had intimate partners. By contrast, the disorganised were impulsive, carried out unplanned attacks, made no attempt to conceal the bodies, may have known the crime scenes beforehand and/or the victims, were socially inadequate, and were loners. These descriptions provided theoretical models which would allow accurate profiles to be compiled based on examination of the crime scene (Harrower, 1998).

According to Ressler (one of the interviewers) *et al.* (1988), sex killers tend to be white, unmarried males, either unemployed or unskilled workers, with previous

histories of psychiatric illness or alcoholism, dysfunctional family backgrounds, and a sexual interest in voyeurism, fetishism, and pornography. Their crime scenes provided information which could then be used to identify them as organised or disorganised.

The FBI now trains profilers worldwide, but it doesn't consider profiles to be suitable in all investigations: they're most useful where there's some indication of psychopathology. According to Harrower (1998):

> The basis of the FBI's approach is that the crime scene and the offender's *modus operandi* will reveal indicators of individual pathology, which may fit into a pattern already observed from case studies of incarcerated offenders.

Douglas *et al.* (1986) describe the FBI four-stages approach as:

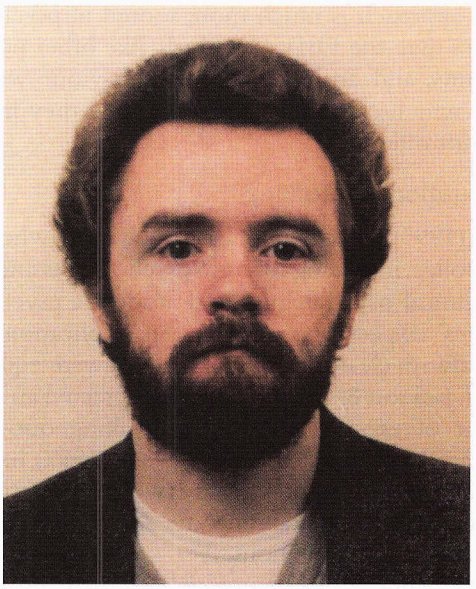
- *data assimilating,* in which as much information as possible is collected
- *crime classification,* when the type of crime is identified
- *crime reconstruction,* during which hypotheses about the behaviour of victims are generated
- *profile generation,* describing demographic and physical characteristics of the likely perpetrator.

According to Holmes (1989), the aims of profiling within this approach are to:

- reduce the scope of an investigation by providing basic information regarding the core social and psychological variables of the offender's personality (e.g. race, age range, employment status and type, educational background and marital status)
- allow some prediction of future offences and their location
- provide a psychological evaluation of belongings found in the offender's possession (e.g. souvenirs, trophies from previous offences)
- provide strategies for interviewing offenders which can take account of individual differences, but profit from experience with offenders who've displayed a common pattern of offending.

The British approach

This is associated with Britton (1997) and Canter (1994a, 1994b: see Case Study 46.1). Canter was originally approached by the Metropolitan Police in 1985 to advise whether psychology could contribute to criminal investigations. In 1986 he became involved in what was initially a serial rape investigation, but later developed into a notorious serial murder case. He helped secure the arrest of John Duffy, convicted in 1988 of two murders and five rapes, for which he was given seven life sentences. The accuracy of his description of Duffy astonished both the police and the media.



John Duffy, serial rapist-killer

Box 46.4 Canter's approach to profiling

- As indicated in Case Study 46.1, the criminal leaves 'psychological traces' or 'shadows' in committing a crime:

  ... tell-tale patterns of behaviour that indicate the sort of person he is. Gleaned from the crime scene and reports from witnesses, these traces are more ambiguous and subtle than those examined by the biologist or physicist ... They are more like shadows [which] ... can indicate where investigators should look and what sort of person they should be looking for ... (Canter, 1994b)

- In addition, we all operate within a social context, so there's an implicit *social* relationship between the offender and victim. This again will offer major clues to the pattern of the offender's life. Sensitive and detailed examination of victims' testimony can reveal speech patterns, interests, obsessions, and ways of behaving which will also have occurred in the offender's daily life. For example, rapists may treat their victims as they treat most of the women in their lives – in the case of Adrian Babb, he actually showed consideration for their feelings, which reflected a generally considerate attitude to other people: see Case Study 46.1.
- According to Boon & Davies (1992), Canter and his colleagues have found five aspects of the criminal and his behaviour to be particularly revealing: residential location, criminal biography, personal characteristics, domestic and social characteristics, and occupational and educational history. Geography is especially important: offenders will operate in areas they know and feel comfortable in (a relatively short distance from their homes).

Canter's approach is much more rooted in psychological principles than the FBI's. Criminals, like other people, act consistently, and analysis of their behaviour will reveal patterns which can offer clues as to how they live when they're not offending.

An evaluation of profiling

Copson (1995) described 30 British profilers who worked for the police, including forensic psychologists and psychiatrists, clinical psychologists, and academic psychologists. Detectives' expectations about the application of OP weren't always clear, and not all profiles were equally well regarded. Jackson & Bekerian (1997) detected an unfortunate 'war of experts' potentially breaking out between various academic profilers, and Stevens (1997) has argued for continued cooperation between detectives and academics, so that OP can become a systematised tool for use in criminal investigations.

OP has undoubted potential if used properly by trained professionals (Harrower, 1998). But how successful is it? Holmes (1989) cites FBI data claiming that 192 cases of profile construction (1981) resulted in 88 arrests, but OP was believed to have contributed to an arrest in just 17 per cent of the arrests. Others (e.g. Oleson, 1996) point out that the FBI's methodology may be fundamentally flawed: there's no control group against which to compare the evidence obtained from offenders, no mention of the statistical techniques used to analyse the data, and much of the interview data is accepted at face value.

In the UK, Copson & Holloway (1997) surveyed detectives who'd worked on 184 cases in which OP had been used. They believed it had produced identification of offenders in less than 3 per cent of cases, and 'helped to solve' the crime in 16 per cent. They conclude that:

> Profiling can work very well, but certainly not in the way some practitioners, let alone dramatists, would have you believe. There is nothing in our findings to support the notion that complex offender characteristics can be predicted with any great accuracy. In fact, with some people you would be better off tossing a coin.

According to Harrower (2000):

> ... both training and practical experience are vital in developing profiling expertise, and productive liaison between the police and psychologists is the way forward in order to achieve both investigative and clinical objectives.

As she points out, the phenomenon of serial murder and the development of OP have clearly captured the public imagination – and a growing number of psychology students want to become forensic psychologists.

Box 46.5 Stalking and its management

- Stalking has come to describe persistent attempts to impose on another person unwanted communications (by phone, e-mail, letters, or graffiti) or contact (via approaches, following or maintaining surveillance). Associated behaviours include sending unsolicited gifts, ordering or cancelling services on the victim's behalf (e.g. pizzas and electricity supply), and stalking can also involve threats, escalating to both physical and sexual violence (Mullen *et al.*, 2000).
- The term was first used in the American media in the late 1980s to describe repeated intrusions upon the famous, usually by disordered fans. It then generalised, first to include harassment of women by ex-partners, and later to all forms of ongoing harassment that induces fear in the victim, regardless of the relationship.
- Mullen *et al.* (1999) have proposed a typology of stalking with five categories. These aren't mutually exclusive, but the typology provides a clinically useful guide when assessing or considering future management, and it predicts the likely duration of the stalking.



Jodie Foster, famous stalkee

Intimacy seekers invariably have serious psychopathology, and are sometimes psychotic. The initial aim of management is to bring their disorders under reasonable control through a combination of drugs and structured psychotherapy. Long-term cessation of stalking is improved if their social isolation can be decreased and their capacity for social interaction improved. They're indifferent to threats or the reality of fines or imprisonment.

Rejected stalkers are rarely mentally ill, but are often inadequate, dependent, angry men with marked social and interpersonal problems. They're quite often substance abusers. They'll often desist when threatened with imprisonment, but may also benefit from therapy.

Incompetent stalkers are the easiest to manage. Telling them to stop is usually sufficient. Most have stopped before receiving psychiatric help, but there's a very high rate of recidivism. The only long-term solution is to improve their social skills and social networks.

Resentful stalkers are difficult to engage in therapy, and are often substance abusers. Their basic personality is

often suspicious and sensitive, and they become resentful of therapists just as they have of others who've crossed their path in the past. But once engaged, they do respond.

Predatory stalkers are best seen as sex offenders. The right mix of legal punishment and therapeutic intervention will relieve both the victim and the stalker of the burden of this destructive behaviour.

THE TREATMENT OF OFFENDERS

According to Honderich (1993), there are two distinct views (both implicit and explicit) as to why people commit crime:

- the individual is a rational agent with free will – an individual's circumstances reflect his/her choices (see Chapter 49)
- we're all, to a greater or lesser degree, products of our environments.

Related to the 'free will' viewpoint are two policies:

- provide as few opportunities as possible for choosing a criminal act
- when people are caught, make the consequences as painful as possible to deter them from future offending.

Based on the second view:

- if environmental conditions are implicated in the cause of the crime, then change is needed in the environment (primarily, the social structure)
- the adverse effects on individuals resulting from the environment need to be addressed.

According to Hollin (1999), in practice these viewpoints and policies crystallise into the debate about the relative effectiveness of punishment and treatment in crime prevention (see Box 46.5).

Situational crime prevention

If crimes are the end result of criminals seizing the opportunity to make a personal, usually financial, gain, then why not look at the opportunity as well as the criminal (Hollin, 1999)? This is exactly the approach of *situational crime prevention:* analysing and changing the environment in an effort to prevent crime.

ASK YOURSELF...

- Try to think of some practical ways in which situational crime prevention could be achieved (see Chapter 21).

The most straightforward way is to *reduce the opportunity for successful crime,* by removing and protecting the target. For example, replacing phone coin boxes with cards, introducing night transport systems to ensure safety of late-night workers, and installing more car alarms, immobilisers and home security systems.

In addition, *increasing the risk of detection* can be achieved through formal surveillance in places where there's opportunity for crime. For example, increased police presence at football matches and city centres at pub-emptying times, CCTV, electronic 'tagging' of offenders, and neighbourhood watch schemes.

ASK YOURSELF...

- Can you see any potential problems with situational crime prevention – both practical and ethical?

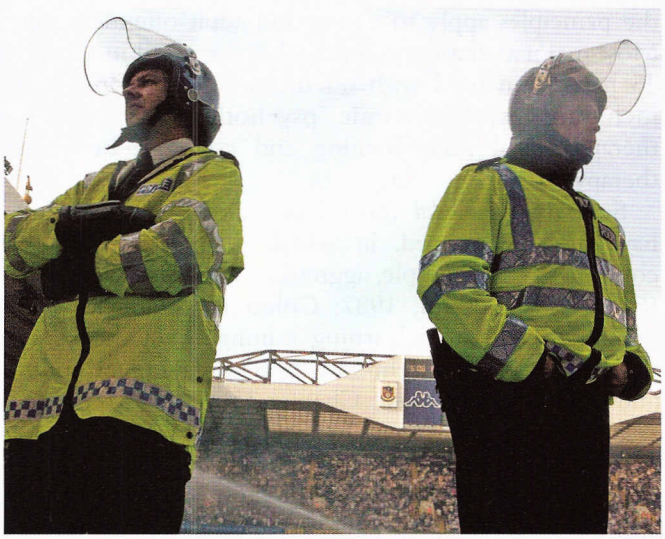
When offenders are deterred from committing a criminal act, is crime actually being reduced or merely displaced onto other victims, times and situations? There are also civil liberties issues relating to tagging, CCTV and other forms of surveillance.

Deterrence is also found in the harsh punishment approach (from fines to 'life sentences').

Punitive prison regimes

ASK YOURSELF...

- Do you believe that offenders should be punished rather than rehabilitated?
- Are your reasons moral, as opposed to pragmatic (such as what is most likely to prevent re-offending)?
- Are punishment and rehabilitation necessarily mutually exclusive?



Increased police presence at football matches is a form of situational crime prevention, increasing the risk of detection

Reconviction rates (*recidivism*) of people discharged from prisons in England and Wales are 54–70 per cent (Lloyd *et al.*, 1994), depending on the type of offender, length of follow-up, and so on. *Punishment-oriented regimes* seek to reduce these figures by making the experience of prison so aversive as to deter ex-prisoners from re-offending. These include the 'short, sharp shock' (introduced in the UK in the 1980s) and 'boot camps', an American concept involving a short period of incarceration in a strict military environment, with a rigid daily schedule of hard labour, drill and ceremony, and physical training (Mackenzie & Souryal, 1995).

Mackenzie & Shaw (1990) found that compared with offenders sentenced to traditional prisons, those who went to boot camp were more positive about their prison experiences and their futures, and held more prosocial attitudes. Mackenzie & Souryal (1995) also reported a range of positive outcomes for the boot-camp group, such as being drug-free, physically healthy, believing that the regime had helped them, and an overall positive effect on their families. However, those sent to boot camp had been convicted of non-violent crimes, and had less serious criminal histories (Hollin, 1999).

Evidence regarding recidivism is very mixed. But there's little evidence that the military regime would successfully change future behaviour if the 'criminogenic needs of the offenders are not being addressed' (Mackenzie *et al.*, 1995).

According to Farrington (1995), findings from longitudinal studies point to the need for strategies to improve young people's academic achievement, interpersonal skills, parental child-rearing practices, and to reduce poverty (see Key Study 46.1).

Treatment programmes

There's a vast literature on *therapeutic approaches,* especially with young offenders (e.g. Hollin & Howells, 1996), but the principles apply to young and adult offenders alike. Most major therapeutic approaches discussed in Chapter 45 have been used with offenders (and see Box 46.5), including psychodynamic psychotherapy, behaviour therapy, social skills training and cognitive–behaviour therapy (CBT).

Several *multimodal* (mixed or 'eclectic') programmes have also been used, in which several methods are combined. For example, aggression replacement training (Glick & Goldstein, 1987; Goldstein & Glick, 1996) combines structured learning training (including social skills and social problem-solving training), anger control and moral education (see Chapter 35).

Does treatment work?

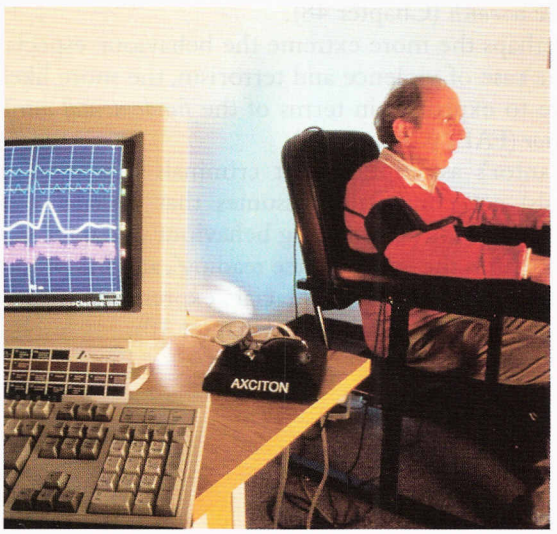
There are hundreds of outcome studies, using different types of intervention, conducted in different settings, and using different measures of 'success'. As with outcome studies in the treatment of mental disorder, *meta-analytic studies* allow general conclusions to be drawn (see Chapter 45). According to Hollin (1999):

- overall, there's a 10 per cent reduction in recidivism when treated offenders are compared with no-treatment controls; but this figure conceals tremendous variability between different programmes
- the best results will be obtained with medium- to high-risk offenders, using structured/focused/directive approaches (in practice, this usually means behavioural methods that incorporate a cognitive component)
- treatment in the community has a stronger effect on delinquency than residential programmes.

Research update 46.1 Lie detection: old and new

- In 2001, Terry Harrington's brainwaves were presented as evidence in a court in Iowa, USA. He'd been sentenced 23 years earlier to life imprisonment for a murder he claims he didn't commit. The brainwave evidence was an attempt to win the right to appeal by proving that Harrington's brain showed no glimmer of recognition for the crime scene (Phillips, 2004a). The initial attempt failed, but the brainwave method was deemed admissible, and Harrington was finally freed in 2003 (McKie, 2004).
- The method, called *brain fingerprinting* (BF), was developed by Lawrence Farwell. It uses a network of scalp electrodes to pick up brainwave signals (P300) that have long been known to be associated with novelty: the signal is emitted exactly 300 milliseconds after the brain is confronted with a stimulus that has special significance to that individual (such as a victim's face or the gun used to rob him).
- In 2004, Farwell used BF to show that (the unfortunately named) Jimmy Ray Slaughter – convicted and sentenced in Oklahoma, USA, to death for the murder of his daughter and partner – lacked any knowledge of key details of the crime scene, including the positions of the victims' bodies. BF is now expected to play a key role in attempts to block Slaughter's execution (McKie, 2004).
- BF is just the kind of technique that could be used to detect *potential* offenders (see Critical Discussion 46.2).
- The UK Home Secretary announced in May 2004 that paedophiles and other sex attackers face compulsory American-style lie-detector tests (*polygraphs*) before and after being freed from prison. Police and probation officers could block early release or order offenders back to jail if they're liable to reoffend. Although polygraphs are routinely used in the USA, they're regarded as too unreliable to be admissible by British courts (Morris, 2004).
- Changes in heart rate, respiration and sweating on the palms and fingers are recorded when the participant responds with a 'yes' or 'no' answer to a series of

questions that have previously been explained so that there'll be no surprises. The hope is that the guilty suspect will show an increase in these measures of autonomic nervous system activity when asked a question relevant to the crime. Generally, accuracy is better than chance, but there can be sizeable *false positives* (innocents judged guilty) and *false negatives* (guilty people judged innocent). A report by the US National Academy of Sciences (2002) concluded that there was no scientific evidence that the polygraph is valid for purposes of national security screening (Ekman, 2003).



Computerised polygraph test in progress

- Ekman (2003), who has advised judges, the FBI and the CIA, has developed a 'face-reading' technique, which he calls the Facial Acting Coding System (FACS). It doesn't measure emotion directly, but 'objectively scores all facial muscular movement', which helps to identify the signs that betray a lie. These might come in very fast facial movements, revealing an emotion that someone is trying to conceal.

CHAPTER SUMMARY

- **Longitudinal studies** help us understand the relationship between **age and crime**, with delinquency peaking at 16–17 years. This reflects increasing **prevalence** and a very high **crime rate** at this age.
- Most juvenile crimes are **status offences** (as opposed to **index/notifiable offences**). Also, most crime is 'adolescence-limited', which can be explained partly in terms of the greater **risk-taking** of adolescents, and partly in terms of **peer group pressure**.
- Several childhood factors have been shown to predict later offending, including **low intelligence/poor school record**, a **family criminal record**, **family poverty**, and **poor parental child-rearing practices**.
- Although neither a disadvantaged background nor 'social failure' inevitably lead to crime, they massively increase the risks of criminal behaviour.
- Most crimes, especially violent crimes, are committed by males. This has led to a view of **women** who commit murder as **doubly deviant**, breaking both the law of the land and the 'natural law' relating to women's 'nature'.
- There's considerable evidence of **gender bias** and **gender differences** in the **criminal justice system**. These are apparent in sentencing, the link between committing crime and being the victim of crime, the kind of crimes committed, and behaviour inside prison and following release.
- Two extreme explanations of **male domination** of crime are **biological determinism** and **social constructionism**. All the major theoretical perspectives within psychology as a whole have been/can be applied to criminal behaviour.
- **Personality factors** (or **domains**), such as **N**, **E**, and especially **P** are related to a wide range of antisocial, criminal and delinquent behaviours. However, more specific **facets** may be more valid predictors of developmental change.
- **Antisocial personality disorder** (APD) or **psychopathy** has long been implicated in criminal behaviour, especially violent crimes. One very controversial aspect of APD is its **treatability**.
- At the heart of APD seems to lie an **emotional disorder**, which represents a **risk factor** for the development of the full disorder. For antisocial behaviour to occur, there needs to be an adverse social environment.
- There's growing evidence of **brain abnormalities** that are **correlated** with APD and murder, but this doesn't allow us to infer that the brain abnormalities actually *cause* the violent behaviour. The possibility of detecting **potential** violent criminals raises fundamental legal and ethical issues.
- A common perception of **terrorists** in general and **suicide bombers** in particular is that they're insane fanatics. But the evidence suggests that they're mainly quite ordinary individuals caught up in violent situations involving the occupation of their homeland by an invading enemy.
- **Offender profiling** (OP) has been used to investigate a variety of crimes. But it's most useful when the crime scene reflects **psychopathology**, as in (serial) murder and rape.
- There are differences in the approaches used by the FBI and British forensic psychologists, who place more emphasis on **psychological principles**. An important example is that offenders will tend to operate close to where they live.
- The use of **polygraphs** is to be used with paedophiles and other sex offenders in the UK, and in the USA **brain fingerprinting** (BF) is admissible evidence in court cases.

- **Situational crime prevention** involves both reducing the opportunity for successful crime and increasing the risk of detection. But criminals may simply **displace** their offences onto other victims, places and times.
- **Punitive prison regimes** may help to reduce **recidivism rates** among less serious criminals, while **treatment programmes** are most successful with medium- to high-risk offenders.
- A wide variety of treatments and therapies has been used, including **multimodal** approaches. **Structured** methods used in **non-residential settings** seem to be the most effective.

Links with other topics/chapters

- If risk-taking is a rite of passage into adulthood, it is so only for *adolescents* in western culture, where initiation ceremonies are lacking, and where young people face contradictory definitions of their social status (Chapter 37).
- Criminology has notoriously ignored the fact of gender, preferring to offer universal theories of crime based on research with males (Harrower, 1998). This is an example of the *androcentric bias* (Chapter 47).
- Eysenck's attempt to explain crime in terms of high E and N scores on the EPI is an example of a *reductionist* explanation (Chapter 49).
- According to Lorenz's *ethological theory of aggression,* inborn sensitivity to appeasement gestures has evolved in order to reduce violence between members of the same species (Chapter 29).
- APD individuals seem to lack this inborn sensitivity, as well as the normal *empathic responses* to others' distress (Chapter 30).
- The study of potential violent offenders, together with its practical implications, is an example of *socially sensitive research* (Chapter 48).
- Perhaps the more extreme the behaviour, especially in the case of violence and terrorism, the more likely we are to explain it in terms of the *fundamental attribution error* (FAE) (Chapter 23).
- Cantor's assumption that criminals (like non-criminals) act consistently assumes that *personality* is the major factor determining behaviour (Chapter 42).
- Ekman is the 'guru of face reading', and has proposed a number of universal facial expressions related to particular *emotional states* (Chapter 10).

SEVEN

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ISSUES AND DEBATES

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The feminist critique of science

Some practical consequences of gender bias

The masculinist bias and sexism: A closer look

The male norm as the standard

The 'mismeasure of woman' and alpha bias

Sexism in research

Sexism in theory: alpha and beta bias

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Cross-cultural psychology and ethnocentrism

What is culture?

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Advantages of cross-cultural research

Cross-cultural versus cultural psychology

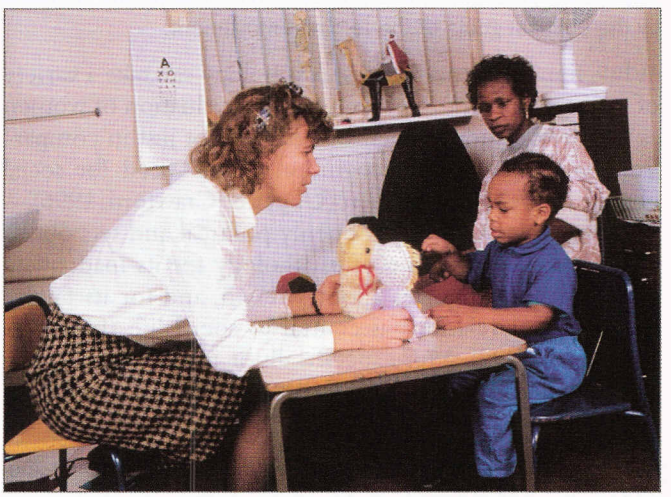
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47

BIAS IN PSYCHOLOGICAL THEORY AND RESEARCH



INTRODUCTION AND OVERVIEW

Mainstream academic psychology, modelling itself on classical, orthodox, natural science (such as physics and chemistry), claims to be *objective, unbiased,* and *value-free.* Collectively, these aims form the *positivist* view of science, or *positivism* (see Chapter 3). As applied to the study of humans, this implies that it's possible to study people as they 'really are', without the psychologist's characteristics influencing the outcome of the investigation in any way.

This chapter shows that a view of psychology as unbiased and value-free is mistaken. Two major forms of bias, *sexism* and *ethnocentrism* (which relate to gender and culture respectively) permeate much psychological theory and research.

Much of the chapter's content is relevant to the topic of prejudice and discrimination. As we saw in Chapter 25, prejudice and discrimination can be understood as characteristics of individuals or of social groups, institutions, and even whole societies. With bias in psychological theory and research, it's sometimes individual psychologists, and sometimes 'psychology as a whole', that are guilty.

GENDER BIAS: FEMINIST PSYCHOLOGY, SEXISM AND ANDROCENTRISM

Not surprisingly, most of the criticism of mainstream psychology regarding its gender bias has come from *feminist psychology,* which Wilkinson (1997) defines as:

> ... psychological theory and practice which is explicitly informed by the political goals of the feminist movement.

While feminism and feminist psychology can take a variety of forms, two common themes are the valuation of women as worthy of study in their own right (not just in comparison with men), and recognition of the need for social change on behalf of women (Unger & Crawford, 1996).

Feminist psychology is openly political and sets out to challenge the discipline of psychology for its inadequate and damaging theories about women, and for its failure to see power relations as central to social life (Unger & Crawford, 1992). More specifically, it insists on exposing and challenging the operation of male power in psychology:

> Psychology's theories often exclude women, or distort our experience by assimilating it to male norms or man-made stereotypes, or by regarding 'women' as a unitary category, to be understood only in comparison with the unitary category 'men' ... Similarly, psychology [screens out] ... the existence and operation of social and structural inequalities between and within social groups ... (Wilkinson, 1991)

Psychology obscures the social and structural operation of male power by concentrating its analysis on people as individuals (*individualism*). Responsibility (and pathology) are located within the individual, to the total neglect of social and political oppression. By ignoring or minimising the social context, psychology obscures the mechanisms of oppression. For example, the unhappiness of some women after childbirth is treated as a problem in individual functioning (with possible hormonal causes), thus distracting attention away from the difficult practical situation in which many new mothers find themselves (Wilkinson, 1997: see Critical Discussion 44.3, page 787).

Box 47.1 Some major feminist criticisms of psychology

- Much psychological research is conducted on all-male samples, but then either fails to make this clear or reports the findings as if they applied equally to women and men.
- Some of the most influential theories within psychology as a whole are based on studies of males only, but are meant to apply equally to women and men.
- If women's behaviour differs from men's, the former is often judged to be pathological, abnormal, or deficient in some way (*sexism*). This is because the behaviour of men is, implicitly or explicitly, taken as the 'standard' or norm against which women's behaviour is compared (*androcentrism* – male-centredness, or the *masculinist bias*).
- Psychological explanations of behaviour tend to emphasise biological (and other internal) causes, as opposed to social (and other external) causes (*individualism*). This gives (and reinforces) the impression that *psychological sex differences* are inevitable and unchangeable. This reinforces widely held *stereotypes* about men and women, contributing to the oppression of women (another form of sexism).
- Heterosexuality (both male and female) is taken, implicitly or explicitly, as the norm, so that homosexuality is seen as abnormal (*heterosexism*).

ASK YOURSELF...

- Try to think of (at least) one example for each of the five major criticisms of psychological theory and research made in Box 47.1.
- Regarding the fourth point, how does this relate to attribution theory as discussed in Chapter 23?

The feminist critique of science

In many ways, a more fundamental criticism of psychology than those listed in Box 47.1 is feminists' belief that scientific enquiry itself (whether this be within psychology or not) is biased.

Psychology's claims to be a science are based on its methods (especially the experiment), and the belief that it's a value-free discipline. But can scientific enquiry be neutral, wholly independent of the value system of the human scientists involved? According to Prince & Hartnett (1993):

> Decisions about what is, and what is not, to be measured, how this is done, and most importantly, what constitutes legitimate research are made by individual scientists within a sociopolitical context, and thus science is ideological.

Many feminist psychologists argue that scientific method is gender-biased. For example, Nicolson (1995) identifies two major problems associated with adherence to the 'objective' investigation of behaviour for the way claims are made about women and gender differences.

- The experimental environment takes the individual 'subject's *behaviour*', as distinct from the 'subject' herself, as the unit of study. Therefore, it becomes deliberately blind to the behaviour's *meaning,* including its social, personal, and cultural contexts. As a result, claims about gender differences in competence and behaviour are attributed to *intrinsic* qualities (either the product of 'gender role socialisation' or biology) as opposed to contextual qualities. This is another reference to *individualism* (see Box 47.1).
- Experimental psychology, far from being context-free, takes place in a very specific context which typically disadvantages women (Eagly, 1987). In an experiment, a woman becomes anonymous, stripped of her social roles and the accompanying power and knowledge she might have achieved in the outside world. She's placed in this 'strange' environment, and expected to respond to the needs of (almost inevitably) a male experimenter who's in charge of the situation, with all the social meaning ascribed to gender power relations.

The belief that it's possible to study people 'as they really are', removed from their usual sociocultural contexts (in a '*de-contextualised*' way), is completely invalid:

> Psychology relies for its data on the practices of socialised and culture-bound individuals, so that to explore 'natural' or 'culture-free' behaviour (namely that behaviour unfettered by cultural, social structures and power relations) is by definition impossible ... (Nicolson, 1995)

Feminist psychologists offer a critical challenge to psychological knowledge on gender issues by drawing on other disciplines, such as sociology. According to Giddens (1979), for example:

> There is no static knowledge about people to be 'discovered' or 'proved' through reductionist experimentation, and thus the researcher takes account of context, meaning and change over time.

ASK YOURSELF...

- Do you agree with Nicolson's claim that all human behaviour is 'culture-bound'?
- What about 'instinctive' behaviours, such as eating, drinking and sex: does culture play a part here too? If so, in what ways?

(These questions are equally relevant to the section on culture bias.)

Some practical consequences of gender bias

According to Kitzinger (1998), questions about sex differences (and similarities) aren't just scientific questions, they're also highly political. Some answers to these questions have been used to keep women out of universities, or to put them in mental hospitals. Other answers have been used to encourage women to go on assertiveness training courses, or to argue that women should have all the same rights and opportunities as men. In other words, the science of sex differences research is always used for political reasons:

> However much psychologists may think or hope or believe that they are doing objective research and discovering truths about the world they are always influenced ... by the social and political context in which they are doing their research ... (Kitzinger, 1998)



Celia Kitzinger, lesbian feminist psychologist

For Prince & Hartnett (1993), scientific psychology has *reified* concepts such as personality and intelligence (treating abstract or metaphorical terms as if they were 'things' or entities):

> ... and the scientific psychology which 'objectively' and 'rationally' produced means of measuring these reifications has been responsible for physical assaults on women such as forced abortions and sterilisations.

Between 1924 and 1972, more than 7500 women in the state of Virginia alone were forcibly sterilised, in particular, 'unwed mothers, prisoners, the feeble-minded, children with discipline problems'. The criterion used in all cases was mental age as measured by the Stanford–Binet intelligence test (Gould, 1981).

Having convinced society that intelligence 'exists' in some objective way, and having produced a means of measuring it, psychologists could then promote and justify discrimination against particular social groups. Another example of the use of intelligence tests to justify blatant discrimination (although not specifically against women) involved the army alpha and beta tests, which

influenced the passing of the 1924 Immigration Restriction Act in the USA.

CRITICAL DISCUSSION 47.1 Psychology's influence on immigration policy in the USA

- Debates in Congress leading to passage of the Immigration Restriction Act (1924) continually made reference to data from the army alpha and beta tests.
- *Eugenicists* (who advocate 'selective breeding' in humans in order to 'improve' genetic stock) lobbied for immigration limits and for imposing harsh quotas against nations of inferior stock. In short, southern and eastern Europeans, who scored lowest on the army tests, should be kept out. The eugenicists battled and won one of the greatest victories of scientific racism in American history. 'America must be kept American', proclaimed President Coolidge as he signed the bill.
- Throughout the 1930s, Jewish refugees, anticipating the Holocaust, sought to emigrate, but were refused admission. Estimates suggest that the quotas barred up to six million southern, central and eastern Europeans between 1924 and 1939:

We know what happened to many who wished to leave, but had nowhere to go. The paths to destruction are often indirect, but ideas can be agents as sure as guns and bombs ... (Gould, 1981)



The results of Army intelligence tests influenced immigration policy in the USA in the 1920s. The quotas were based on the arrivals before 1890. Immigrants up to that year were mainly Nordic, and supposedly more intelligent than the Southern and Eastern Europeans who arrived later

In the 1993 preface to *In a Different Voice* (1982), Gilligan says that at the core of her work on moral development in women and girls was the realisation that within psychology, and in society at large, 'values were taken as facts'. She continues:

> In the aftermath of the Holocaust ... it is not tenable for psychologists or social scientists to adopt a position of ethical neutrality or cultural relativism ... Such a hands-off stance in the face of atrocity amounts to a kind of complicity.

While the example she gives is clearly extreme, it helps to illustrate the argument that not only do psychologists (and other scientists) have a responsibility to make their values about important social and political issues explicit, but failure to do so may (unwittingly) contribute to prejudice, discrimination, and oppression. These considerations are as relevant to a discussion of the *ethics* of psychological research as they are to gender (and culture) bias, and are discussed in more detail in Chapter 48.

The masculinist bias and sexism: A closer look

Box 47.1 (page 856) identified the masculinist bias (*androcentrism*) and sexism as two major criticisms of mainstream psychology made by feminist psychologists. While each of these can take different forms, emphasis here will be given to (a) the argument that men are taken as some sort of standard or norm, against which women are compared and judged, and (b) gender bias in psychological research.

The male norm as the standard

According to Tavris (1993):

> In any domain of life in which men set the standard of normalcy, women will be considered abnormal, and society will debate woman's 'place' and her 'nature'. Many women experience tremendous conflict in trying to decide whether to be 'like' men or 'opposite' from them, and this conflict is itself evidence of the implicit male standard against which they are measuring themselves. This is why it is normal for women to feel abnormal.

Tavris gives two examples of why it's normal for women to feel abnormal. First, in 1985, the American Psychiatric Association proposed two new categories of mental disorder for inclusion in the revised (third) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R: see Chapter 43). One was *masochistic personality*. In DSM-II, this was described as one of the psychosexual disorders, in which sexual gratification requires being hurt or humiliated. The proposal was to extend the term so that it became a more pervasive personality disorder, in which one seeks failure at work, at home, and in relationships, rejects opportunities for pleasure, puts others first (thereby sacrificing one's own needs), plays the martyr, and so on.

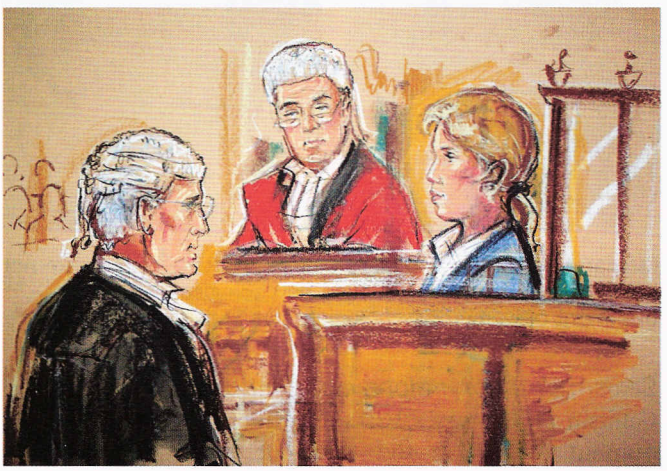
While not intended to apply to women exclusively, these characteristics are associated predominantly with the female role. Indeed, according to Caplan (1991), it represented a way of calling psychopathological the behaviour of women who conform to social norms for a 'feminine woman' (the 'good wife syndrome').

In short, such a diagnostic label was biased against women, and perpetuated the myth of women's masochism. The label was eventually changed to 'self-defeating personality disorder', and was put in the appendix of DSM-III-R.

ASK YOURSELF...

- If you were proposing a parallel diagnosis for men who conform to social norms for a 'masculine man', what characteristics would this have to include, and what would you call it?
- Could you justify including sadism in the diagnostic criteria for conformist men?

Tavris's second example of why it's normal for women to feel abnormal concerns *causal attributions* made about men's and women's behaviours. When men have problems, such as drug abuse, and behave in socially unacceptable ways, as in rape and other forms of violence, the causes are looked for in their upbringing. Women's problems, however, are seen as the result of their psyches or hormones. Explaining women's problems in this way is another form of individualism, with the further implication that it could have been different for men (they are the victims of their childhood, for example), but not for women ('that's what women are like'). (But see Chapter 46.)



Do women get into trouble with the law only for 'internal' reasons?

The 'mismeasure of woman' and alpha bias

According to Tavris, the view that man is the norm and woman is the opposite, lesser or deficient (the problem) constitutes one of three currently competing views regarding the 'mismeasure of woman' (meant to parallel Gould's, 1981, *The Mismeasure of Man,* a renowned critique of intelligence testing: see Critical Discussion 47.1 and Chapter 41). It's the view that underpins so much psychological research designed to discover why women aren't 'as something' (moral, intelligent, rational) as men (what Hare-Mustin & Maracek, 1988 call *alpha-bias:* see below). Alpha bias also underlies the enormous self-help industry: women consume millions of books and magazines advising them how to become more beautiful, independent, and so on. Men, being 'normal', feel no need to 'fix' themselves in corresponding ways (Tavris, 1993).



Women are consumers of vast amounts of alpha bias

Box 47.2 A demonstration of alpha bias

- Wilson (1994) maintains that the reason 95 per cent of bank managers, company directors, judges, and university professors in Britain are men is that men are 'more competitive', and because 'dominance is a personality characteristic determined by male hormones'.
- Wilson also argues that women in academic jobs are less productive than men: 'objectively speaking, women may already be over-promoted'. Women who do achieve promotion to top management positions 'may have brains that are masculinised'.
- The research cited by Wilson to support these claims comes partly from the psychometric testing industries which provide 'scientific' evidence of women's inadequacies, such as (compared with men) their 'lack' of mathematical and spatial abilities. Even if women are considered to have the abilities to perform well in professional jobs, says Wilson, they have personality defects (in particular, low self-esteem and lack of assertiveness) which impede performance:

  These differences [in mental abilities, motivation, personality and values] are deep-rooted, based in biology, and not easily dismantled by social engineering. Because of them we are unlikely to see the day when the occupational profiles of men and women are the same.

(From Wilson, 1994; Wilkinson, 1997)

ASK YOURSELF...

- Try to identify examples of individualism in Box 47.2.
- Can you formulate some arguments against Wilson's claims?

Wilson is combining alpha bias with individualism in order to argue that women are 'naturally' deficient in the 'male' qualities needed to achieve in certain occupations. He's also assuming that the research he draws on to make his claims isn't itself gender-biased.

Sexism in research

The American Psychological Association's Board of Social and Ethical Responsibility set up a Committee on Nonsexist Research, which reported its findings as *Guidelines for Avoiding Sexism in Psychological Research* (Denmark *et al.*, 1988). This maintains that gender bias is found at all stages of the research process:

- question formulation
- research methods and design
- data analysis and interpretation, and
- conclusion formulation.

The principles set out in the *Guidelines* are meant to apply to other forms of bias too: those concerned with race, ethnicity, disability, sexual orientation and socio-economic status.

Box 47.3 Examples of gender bias at each stage of the research process

- **Question formulation:** It's assumed that topics relevant to white males are more important and 'basic' (e.g. the effects of TV violence on aggression in boys: see Chapter 29), while those relevant to white females, or ethnic minority females or males, are more marginal, specialised, or applied (e.g. the psychological correlates of pregnancy or the menopause).
- **Research methods and design:** Surprisingly often, the sex and race of the participants, researchers, and any stooges/confederates who may be involved, aren't specified. Consequently, potential interactions between these variables aren't accounted for. For example, men tend to display more helping behaviour than women in studies involving a young, female confederate 'victim' (see Chapter 30). This could be a function of either the sex of the confederate or an interaction between the confederate and the participant, rather than sex differences between the participants (which is the conclusion usually drawn).
- **Data analysis and interpretation:** Significant sex differences may be reported in very misleading ways, because the wrong sorts of comparisons are made. For example:

  'The spatial ability scores of women in our sample is significantly lower than those of men, at the 0.01 level'. You might conclude from this that women cannot or should not become architects or engineers. However, 'Successful architects score above 32 on our spatial ability test ... engineers score above 31 ... twelve per cent of women and 16 per cent of men in our sample score above 31; eleven per cent of women and 15 per cent of men score above 32'. What conclusions would you draw now? (Denmark et al.*, 1988)*

- **Conclusion formulation:** Results based on one sex only are then applied to both. This can be seen in some of the major theories within developmental psychology, notably Erikson's *psychosocial theory* of development (1950: see Chapters 37 and 38), Levinson *et al.*'s (1978) *Seasons of a Man's Life* (see Chapter 38), and Kohlberg's theory of moral development (1969: see Chapter 35). These all demonstrate *beta-bias* (Hare-Mustin & Maracek, 1988), and are discussed further below.

(Based on Denmark *et al.*, 1988)



Margaret Washburn and Mary Calkins; if these women are not household names, it is because psychological literature's treatment of women psychologists has kept them invisible

Sexism in theory: alpha and beta bias

Gilligan (1982) gives Erikson's theory of lifespan development (based on the study of males only) as one example of a sexist theory, which portrays women as 'deviants' (*alpha bias*). In one version of his theory, Erikson (1950) describes a series of eight *universal* stages, so that, for both sexes, in all cultures, the conflict between identity and role confusion (adolescence) precedes that between intimacy and isolation (young adulthood). In another version, he acknowledges that the sequence is *different* for a female, who postpones her identity as she prepares to attract the man whose name she'll adopt, and by whose status she'll be defined (Erikson, 1968). For women, intimacy seems to go along with identity: they come to know themselves through their relationships with others (Gilligan, 1982).

Despite his observation of sex differences, the sequence of stages in Erikson's psychosocial theory remains unchanged (see Table 38.1, page 650). As Gilligan points out:

> Identity continues to precede intimacy as male experience continues to define his [Erikson's] life-cycle concept.

Similarly, Kohlberg's (1969) six-stage theory of moral development was based on a 20-year longitudinal study of 84 boys, but he claims that these stages are universal (see Chapter 35). Females rarely attain a level of moral reasoning above stage three ('Good boy–nice girl' orientation), which is supposed to be achieved by most adolescents and adults. This leaves females looking decidedly morally deficient (*alpha bias*).

Like other feminist psychologists, Gilligan argues that psychology speaks with a 'male voice', describing the world from a male perspective and confusing this with absolute truth (*beta-bias*). The task of feminist psychology is to listen to women and girls who speak in a 'different voice' (Gilligan, 1982; Brown & Gilligan, 1992). Gilligan's work with females has led her to argue that men and women have qualitatively different conceptions of morality. By stressing the *differences* between men and women (an *alpha-biased approach*), Gilligan is attempting to redress the balance, created by Kohlberg's *beta-biased theory.*

ASK YOURSELF...

- In what ways is Freud's psychoanalytic theory (especially the psychosexual stages of development) sexist (or what Grosz, 1987, calls 'phallocentric')?
- Repeat this exercise for Levinson *et al.*'s theory of adult development, and any other theory you're familiar with.

CULTURE BIAS

In discussing gender bias, we've made several references to culture bias. As we noted earlier, Denmark *et al.*'s (1988) report on sexism is meant to apply equally to all other major forms of bias, including cultural (see Box 47.3). Ironically, many feminist critics of Gilligan's ideas have argued that women aren't a cohesive group who speak in a single voice, a view which imposes a false sameness upon the diversity of women's voices across differences of age, ethnicity, (dis)ability, class, and other social divisions (Wilkinson, 1997).

ASK YOURSELF...

- Before reading on, ask yourself what's meant by the term 'culture'.
- How is it related to 'race', 'ethnicity' and 'subcultures'?

Cross-cultural psychology and ethnocentrism

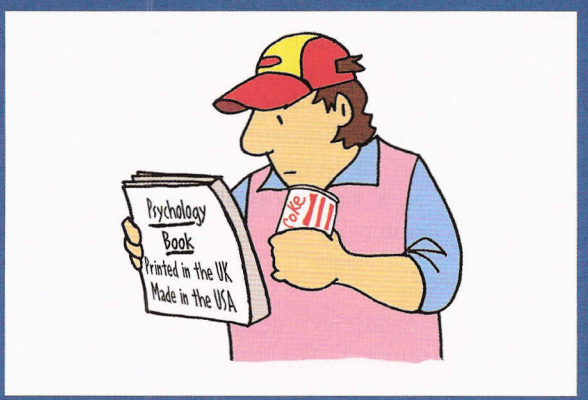
According to Smith & Bond (1998), cross-cultural psychology studies *variability* in behaviour among the various societies and cultural groups around the world. For Jahoda (1978), its additional goal is to identify what's *similar* across different cultures, and thus likely to be our common human heritage (the *universals* of human behaviour).

Cross-cultural psychology is important because it helps to correct *ethnocentrism,* the strong human tendency to use our own ethnic or cultural groups' norms and values to define what's 'natural' and 'correct' for everyone ('reality': Triandis, 1990). Historically, psychology has been dominated by white, middle-class males in the USA. Over the last century, they've enjoyed a monopoly as both the researchers and the 'subjects' of the discipline (Moghaddam & Studer, 1997). They constitute the core of psychology's *First World* (Moghaddam, 1987).

Box 47.4 Psychology's First, Second and Third Worlds

- The USA, the *First World* of psychology, dominates the international arena and monopolises the manufacture of psychological knowledge, which it exports to other countries around the globe, through control over books and journals, test manufacture and distribution, training centres, and so on.
- The *Second World* countries comprise western European nations and Russia. They have far less influence in shaping psychology around the world, although, ironically, it's in these countries that modern psychology has its philosophical roots (see Chapter 3). Just as the countries of the Second World find themselves overpowered by American popular culture, they also find themselves overwhelmed by US-manufactured psychological knowledge.
- *Third World* countries are mostly importers of psychological knowledge, first from the USA but also from the Second World countries with which they historically had colonial ties (such as Pakistan and England). India is the most important Third World 'producer' of psychological knowledge, but even there most research follows the lines established by the USA and, to a lesser extent, western Europe.

(From Moghaddam & Studer, 1997)



According to Moghaddam *et al.* (1993), American researchers and participants:

> ... have shared a lifestyle and value system that differs not only from that of most other people in North America, such as ethnic minorities and women, but also the vast majority of people in the rest of the world.



A symbol of western plenty in the midst of Third World poverty

Yet the findings from this research, and the theories based upon it, have been applied to *people in general,* as if culture makes no difference. An implicit equation is made between 'human being' and 'human being from western culture' (the *Anglocentric* or *Eurocentric bias*).

When members of other cultural groups have been studied, they've usually been *compared* with western samples, using the behaviour and experience of the latter as the 'standard'. As with androcentrism, it's the failure to acknowledge this bias which creates the misleading and false impression that what's being said about behaviour can be generalised without qualification.

Cross-cultural psychologists *don't* equate 'human being' with 'member of western culture', because for them, cultural background is the crucial *independent variable.* In view of the domination of First World psychology, this distinction becomes crucial. At the same time, cross-cultural psychologists consider the search for universal principles of human behaviour as quite valid (and consistent with the 'classical' view of science: see page 856 and Chapter 3).

What is culture?

Herskovits (1955) defines culture as 'the human-made part of the environment'. For Triandis (1994):

> Culture is to society what memory is to individuals. In other words, culture includes the traditions that tell 'what has worked' in the past. It also encompasses the way people have learned to look at their environment and themselves, and their unstated assumptions about the way the world is and the way people should act.

The 'human-made' part of the environment can be broken down into *objective* aspects (such as tools, roads and radio stations) and *subjective* aspects (such as categorisations, associations, norms, roles and values). This allows us to examine how subjective culture influences behaviour (Triandis, 1994). While culture is made by humans, it also helps to 'make' them: humans have an *interactive* relationship with culture (Moghaddam *et al.*, 1993).

Much cross-cultural research is actually based on 'national cultures', often comprising a number of subcultures, which may be demarcated by religion (as in Northern Ireland), language (Belgium), or race (Malaysia and Singapore). However, such research often fails to provide any more details about the participants than the name of the country (national culture) in which the study was carried out. According to Smith & Bond (1998), when this happens, we pay two 'penalties':

- when we compare national cultures, we can lose track of the enormous diversity found within many of the major nations of the world, and differences found between any two countries might well also be found between carefully selected subcultures within those countries;
- there's the danger of implying that national cultures are unitary systems, free of conflict, confusion, and dissent; this is rarely the case.



A multi-racial classroom

How do cultures differ?

Definitions of culture such as those above stress what different cultures have in common. To evaluate research findings and theory that are culturally biased, it's even more important to consider how cultures differ from each other. Triandis (1990) identifies several cultural syndromes, which he defines as:

> ... a pattern of values, attitudes, beliefs, norms and behaviours that can be used to contrast a group of cultures to another group of cultures.

Box 47.5 Three major cultural syndromes used to contrast different cultures

- **Cultural complexity** refers to how much attention people must pay to time. This is related to the number and diversity of the roles that members of the culture typically play. More industrialised and technologically advanced cultures, such as Japan, Sweden and the USA, are more complex in this way.
- **Individualism–collectivism** refers to whether one's identity is defined by personal choices and achievements (the autonomous individual: *individualism*) or by characteristics of the collective group to which one is more or less permanently attached, such as the family, tribal or religious group, or country (*collectivism*). While people in every culture display both, the relative emphasis in the West is towards individualism, and in the East towards collectivism. Broadly, capitalist politico-economic systems are associated with individualism, while socialist societies are associated with collectivism.
- **Tight cultures** expect their members to behave according to clearly defined norms, and there's very little tolerance of deviation from those norms. Japan is a good example of a tight culture, and Thailand an example of a loose culture.

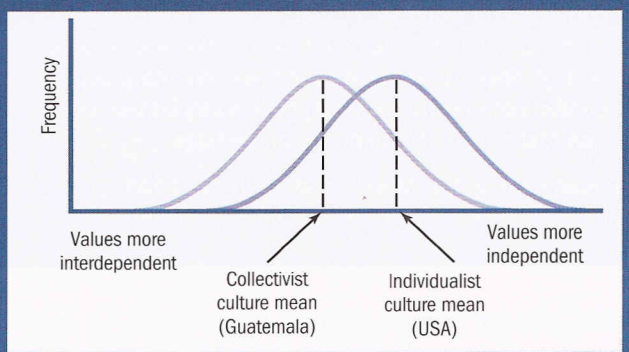


Figure 47.1 Hypothetical distributions of interdependent/independent value scores in a collectivist and an individualist national culture (from Smith & Bond, 1998)

(Based on Smith & Bond, 1998; Triandis, 1990, 1994)

The emic–etic distinction (E-ED)

Research has to begin somewhere and, inevitably, this usually involves an instrument or observational technique rooted in the researcher's own culture (Berry, 1969). These can be used for studying both cross-cultural differences and universal aspects of human behaviour (or the 'psychic unity of mankind').

ASK YOURSELF...

- Try to identify some behaviours (both normal and abnormal) that can be considered to have both universal (common to all cultures) and culture-specific features.

The distinction between culture-specific and universal behaviour is related to what cross-cultural psychologists call the *emic–etic distinction* (E-ED), first made by Pike (1954) to refer to two different approaches to the study of behaviour:

- the *etic* looks at behaviour from *outside* a particular cultural system
- the *emic* looks at behaviour from the *inside*.

This derives from the distinction made in linguistics between phon*etics* (the study of universal sounds, independently of their meaning) and phon*emics* (the study of universal sounds as they contribute to meaning: see Chapter 19).

'Etics' refers to culturally general concepts, which are easier to understand (because they're common to all cultures), while 'emics' refers to culturally specific concepts, which include all the ways that particular cultures deal with etics. It's the emics of another culture that are often so difficult to understand (Brislin, 1993).

The research tools that the 'visiting' psychologist brings from 'home' are an emic for the home culture, but when they're assumed to be valid in the 'alien' culture and are used to compare them, they're said to be an *imposed etic* (Berry, 1969). Many attempts to replicate American studies in other parts of the world involve an imposed etic: they all assume that the situation being studied has the same meaning for members of the alien culture as it does for members of the researcher's own culture (Smith & Bond, 1998).

The danger of imposed etics is that they're likely to involve imposition of the researcher's own cultural biases and theoretical framework. These simply may not 'fit' the phenomena being studied, resulting in their distortion. A related danger is *ethnocentrism*.

CRITICAL DISCUSSION 47.2 Intelligence as an imposed etic

- Brislin's (1993) example is the concept of intelligence.
- The etic is 'solving problems, the exact form of which hasn't been seen before', a definition which at least recognises that what constitutes a 'problem' differs between cultures.
- However, is the emic of 'mental quickness' (as measured by IQ tests, for example) universally valid?
- Among the Baganda people of Uganda, for example, intelligence is associated with slow, careful, deliberate thought (Wober, 1974). Nor is quick thinking necessarily a valid emic for all schoolchildren within a culturally diverse country like the USA (Brislin, 1993).

ASK YOURSELF...

- Can you identify other examples of imposed etics in relation to intelligence/intelligence tests? (See Chapter 41.)



Village elders in Mali, assembled to make an important decision

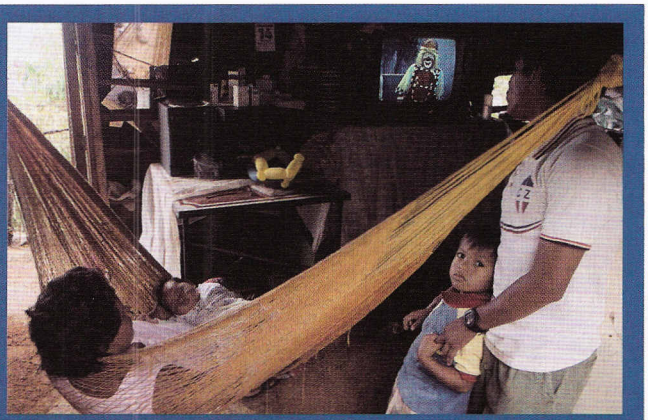
Psychologists need to adapt their methods so that they're studying the same processes in different cultures (Moghaddam *et al.*, 1993). But how do we know that we're studying the same processes? What does 'same' mean in this context? For Brislin (1993), this is the problem of *equivalence*. The very experience of participating in psychological testing will be strange and unfamiliar to members of non-western cultures (Lonner, 1990). Even if measures are adapted for use in other cultures, psychologists should be aware that simply being asked to do a test may be odd for some people (Howat, 1999).

Advantages of cross-cultural research

It may now seem obvious (almost 'common sense') to state that psychological theories must be based on the study of people's behaviours from all parts of the world. However, it's important to give specific reasons and examples in support of this argument.

Box 47.6 Major advantages of cross-cultural research (C-CR)

- **Highlighting implicit assumptions:** C-CR allows investigators to examine the influence of their own beliefs and assumptions, revealing how human behaviour cannot be separated from its cultural context.
- **Separating behaviour from context:** Being able to stand back from their own cultural experiences allows researchers to appreciate the impact of situational factors on behaviour. They're thus less likely to make the *fundamental attribution error* (see Chapter 23), or to use a 'deficit model' to explain the performances of minority group members.
- **Extending the range of variables:** C-CR expands the range of variables and concepts that can be explored. For example, people in individualist and collectivist cultures tend to explain behaviour in different ways, with the latter less likely to make dispositional attributions (see Chapter 23).



A researcher would have to go a long way to find a part of the world television hasn't reached

- **Separating variables:** C-CR allows the separation of the effects of variables that may be confounded within a particular culture. For example, studying the effects of TV on school achievement is very difficult using just British or American samples, since the vast majority of these families owns (at least) one TV set!
- **Testing theories:** Only by conducting C-CR can western psychologists be sure whether their theories and research findings are relevant outside their own cultural contexts. For example, Thibaut & Kelley's exchange theory of relationships (see Chapter 28), and Sherif *et al.*'s 'Robber's Cave' field experiment on intergroup conflict (see Key Study 25.1) have all failed the replication test outside North American settings.

(Based on Rogoff & Morelli, 1989; Brislin, 1993; Moghaddam *et al.*, 1993; Smith & Bond, 1998)

Cross-cultural versus cultural psychology

Several criticisms have been made of cross-cultural psychology (CCP), mainly from *cultural psychologists,* for whom mind is embedded in a sociohistorical process that shapes and creates 'multiple realities' (Shweder, 1990). Instead of trying to identify universal 'laws' of psychological functioning (a major goal of CCP: Much, 1995), cultural psychologists adopt a *relativistic* approach and stress the *uniqueness* of different cultures (as in *indigenous* psychology).

CCP is a branch of experimental social, cognitive and personality psychology, and most of what's been known as CCP has presupposed the categories and models derived from (mostly experimental) research with (limited samples of) Euro-American populations. It has mostly either (a) 'tested the hypothesis' or 'validated the instrument' in other cultures, or (b) 'measured' the social and psychological characteristics of members of other cultures with the methods and standards of western populations usually assumed as a valid norm. CCP is an outgrowth of 'mainstream' psychology, with an emphasis on natural scientific methods. The new 'cultural

psychology' (sometimes called *trans*-cultural: e.g. Bruner, 1990; Cole, 1990) can be seen as a rejection of mainstream psychology, favouring the use of qualitative and ethnographic approaches (Martin, 1998).

CONCLUSIONS

Cole (1996) refers to the results of the last 100 years of psychological research (including CCP) as the 'first psychology'. We shouldn't discard these results, since:

> Cross-cultural studies, especially when they are sensitive to the local organization of activity, can serve to refute ethnocentric conclusions that 'those people' suffer from general cognitive deficits as a consequence of cultural inadequacies ...

But Cole advocates a return to the early decades of psychology, particularly Wundt's belief that the methods of natural science could be applied only to the most basic, universal and, therefore, *timeless* aspects of human behaviour. Culturally mediated and historically dependent 'higher psychological processes' need historical and developmental methods. What Wundt was advocating was a:

> ... road along which culture is placed on a level with biology and society in shaping individual human natures. The name correctly given to that enterprise is *cultural psychology,* a major late twentieth-century manifestation of the second psychology ... (Cole, 1996)

Despite its shortcomings, Moghaddam & Studer (1997) believe that CCP is one of the avenues through which minorities have begun to have their voices heard in psychology and that:

> ... there has been a demand that psychology make good its claim to being the science of humankind by including women and non-whites as research participants.

CHAPTER SUMMARY

- A **positivist** study of people implies an objective, value-free psychology, in which the psychologist's characteristics have no influence on the investigation's outcome. However, **sexism** and **ethnocentrism** pervade much psychological theory and research.
- **Feminist psychologists** challenge mainstream psychology's theories about women, who are either excluded from research studies or whose experiences are assimilated to/matched against male norms (**androcentrism**/the **masculinist bias**).
- Male power and social and political oppression are screened out through **individualism**, thus playing down the social context. This reinforces popular gender stereotypes, contributing to women's oppression.
- Feminist psychologists also challenge psychology's claim to be an objective, value-free science. Decisions about what constitutes legitimate research are made by individual scientists within a **sociopolitical context**, making science **ideological**.
- **Scientific method** itself is **gender-biased**, concentrating on the 'subject's' behaviour, rather than its meaning, and ignoring contextual influences. These typically include a male experimenter who controls the situation.
- Using psychometric test results, Wilson argues that men and women differ in terms of mental abilities, motivation, personality, and values, which are based in biology. This demonstrates **alpha bias**.
- According to Denmark *et al.*, gender bias is found at all stages of the **research process.** The last stage (**conclusion formulation**) is related to **theory construction**. Levinson *et al.*'s, Erikson's, and Kohlberg's theories are based on all-male samples and describe the world from male perspectives (**beta bias**).
- **Cross-cultural psychology** (CCP) is concerned with both behavioural **variability** between cultural groups and behavioural **universals**. It also helps to correct **ethnocentrism**.
- American researchers and participants share lifestyles and value systems which differ from those of both most other North Americans and the rest of the world's population. Yet the research findings are applied to people in general, disregarding culture's relevance (the **Anglocentric/Eurocentric bias**).
- **Culture** is the human-made part of the environment, comprising both **objective** and **subjective** aspects. When cross-cultural researchers compare national cultures, they fail to recognise the great diversity often found within them.
- Different cultures can be assessed in terms of **cultural complexity**, **individualism–collectivism**, and considering whether they are **tight** or **loose**. The relative emphasis in the West is towards individualism, and in the East towards collectivism.
- The distinction between culture-specific and universal behaviour corresponds to the **emic–etic distinction** (E-ED). When western psychologists study non-western cultures, they often use research tools which are emic for them but an **imposed etic** for the culture being studied.
- Only by doing cross-cultural research can western psychologists be sure that their theories and research findings are relevant outside their own cultural contexts.
- CCP is an outgrowth of mainstream psychology, adopting a natural scientific approach. **Cultural psychologists** reject this approach in favour of qualitative and ethnographic methods, stressing the **uniqueness** of cultures.

Links with other topics/chapters

- Research into *psychological sex differences* is highly politicised, with a bias towards publishing only those studies that produce significant differences in the expected (i.e. stereotyped) direction (Chapter 36).
- The *pathologising* of homosexuality – and the fact that it's no longer officially a mental disorder – demonstrates how psychiatry (like psychology) isn't objective or value-free (Chapter 44).
- The claim that *scientific enquiry* cannot be neutral isn't made just by feminist psychologists. *Critical psychologists* and *discursive psychologists* (who are sometimes both referred to as 'social constructionists': Burr, 1995; Jones & Elcock, 2001) both reject many of the basic assumptions and practices of mainstream experimental psychology (Chapters 2 and 3).
- Gilligan believes that men and women have different kinds of *morality,* and that Kohlberg's theory is based on a male definition of morality (Chapter 35).
- The concept of time differs between cultures, as reflected in *language* (Chapter 18).
- The tightness of cultures is relevant to the *criteria for defining normality/abnormality* (Chapter 43).

Codes of conduct and ethical guidelines

Psychologists as scientists/investigators

Human participants

Consent and informed consent

Deception

Debriefing

Protection of participants

Ethical issues arising from the study of social influence

Widening the ethical debate: the ethics of socially sensitive research (SSR)

What is SSR?

Protecting the individual versus harming the group

Protecting the individual versus benefiting society

The 'double obligation dilemma' (DOD)

Non-human (animal) subjects

How do we know that animals suffer?

How can we justify experiments with non-humans?

Safeguards for animal subjects

The medical justification argument

Psychologists as practitioners

Psychology as value-free science

Therapists as value-neutral and non-directive

The influence of the therapist

Freedom and behavioural control

The abuse of patients by therapists

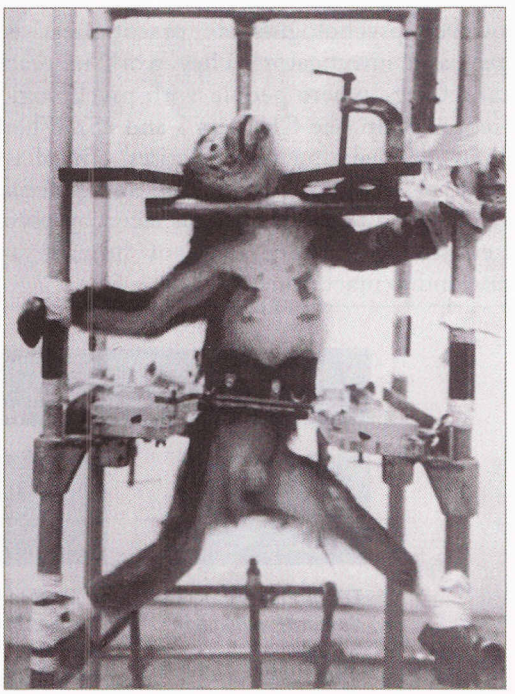
Conclusions

Chapter summary

Links with other topics/chapters

48

ETHICAL ISSUES IN PSYCHOLOGY



INTRODUCTION AND OVERVIEW

One of psychology's unique features is that people are both the investigators and the subject matter (see Chapter 3). This means that the 'things' studied in a psychological investigation are capable of thoughts and feelings. Biologists and medical researchers share this problem of subjecting living, *sentient* things to sometimes painful, stressful, or strange and unusual experiences in the name of furthering science.

Just as Orne (1962) regards the psychological experiment as primarily a *social situation* (which raises questions of objectivity: see Chapter 3), so every psychological investigation is an *ethical situation* (raising questions of propriety and responsibility). Similarly, just as methodological issues permeate psychological research, so do ethical issues. For example, the aims of psychology as a science (see Chapters 1 and 3) concern what's appropriate as much as what's possible. Social psychology's use of stooges to deceive naïve participants (see Chapters 26, 27, 29 and 30), and the surgical manipulation of animals' brains in physiological psychology (Chapters 4 and 9) are further examples of the essential difference between the study of the physical world and that of living subjects. What psychologists can and cannot do is determined by the effects of the research on those being studied, as much as by what they want to find out.

However, psychologists are practitioners as well as scientists and investigators. They work in practical and clinical settings, where people with psychological problems require help (see Chapters 1 and 45). Whenever the possibility of changing people arises, ethical issues also arise, just as they do in medicine and psychiatry. This chapter looks at the ethical issues faced by psychologists as scientists/investigators, both of humans and non-humans, and as practitioners.

CODES OF CONDUCT AND ETHICAL GUIDELINES

While there are responsibilities and obligations common to both the scientist and practitioner roles, there are also some important differences. These are reflected in the codes of conduct and ethical guidelines published by the major professional bodies for psychologists, the British Psychological Society (BPS) and the American Psychological Association (APA).

As shown in Figure 48.1, *The Code of Conduct for Psychologists* (BPS, 1985) and the *Code of Conduct, Ethical Principles and Guidelines* (BPS, 2000) apply to both the main areas of research and practice, while there are additional documents designed for the two areas separately. The *Ethical Principles for Conducting Research with Human Participants* (BPS, 1990, 1993; now incorporated into the *Code of Conduct,* 2000) and the *Guidelines for the Use of Animals in Research* (BPS and the Committee of the Experimental Psychological Society, 1985) obviously apply to research. The *Code of Conduct* (2000) includes a section on 'Guidelines for psychologists working with animals'. *Guidelines for the Professional Practice of Clinical Psychology* (BPS, 1983) and the *Division of Clinical Psychology Professional Practice Guidelines* (BPS, 1995) both apply to practice.

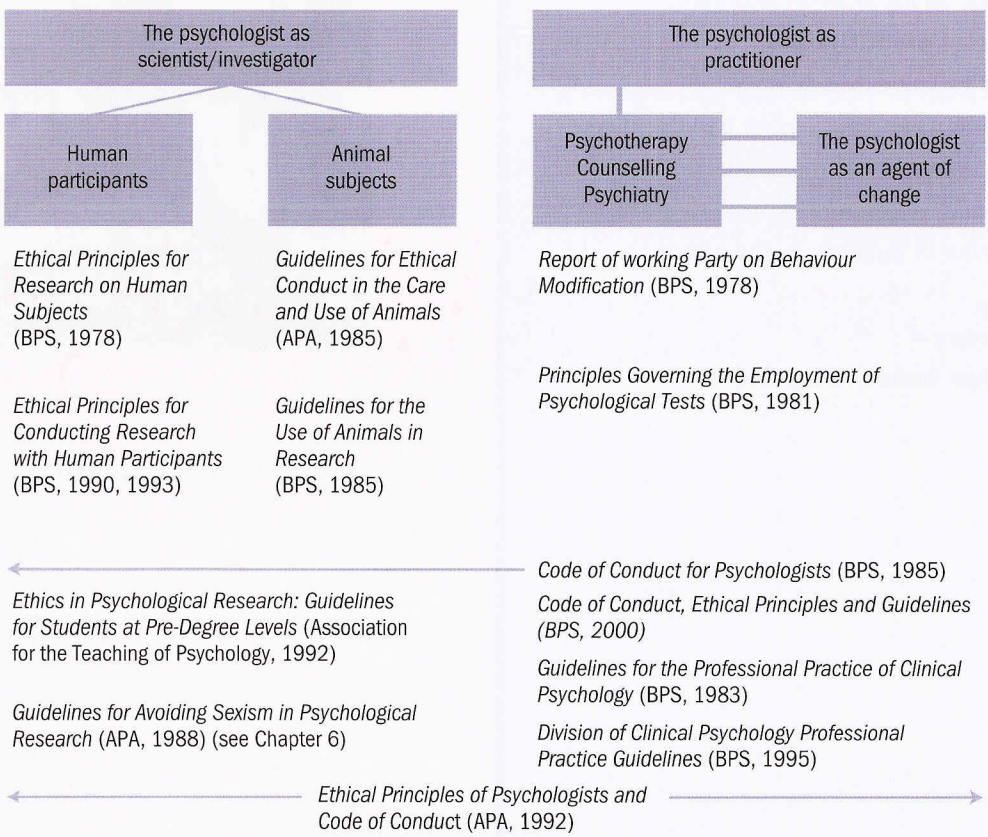


Figure 48.1 Major codes of conduct/ethical guidelines published by the British Psychological Society (BPS) and the American Psychological Association (APA)

ASK YOURSELF...
- Do you think it's necessary for psychologists to have written codes of conduct and ethical guidelines?
- What do you consider to be their major functions?

According to Gale (1995), the fact that both the BPS and APA codes are periodically reviewed and revised indicates that at least some aspects don't depend on absolute or universal ethical truths. Guidelines need to be updated in light of the changing social and political contexts in which psychological research takes place. For example, new issues, such as sexual behaviour in the context of AIDS, might highlight new ethical problems. Information revealed by participants can create conflict between the need to protect individuals and the protection of society at large. For instance, in spite of the confidentiality requirement, should a researcher inform the sexual partner of an HIV-infected participant? (See Critical Discussion 48.2.) As Gale (1995) points out:

> One consequence of such breaches of confidentiality could be the withdrawal of consent by particular groups and the undermining of future research, demonstrating ... how one ethical principle fights against another.

More importantly, changing views about the nature of individual rights will call into question the extent to which psychological research respects or is insensitive to such rights.

One of the earliest formal statements of ethical principles published by the BPS was the *Ethical Principles for Research on Human Subjects* (1978). The *Ethical Principles* (1990, 1993, 2000) refers to 'participants' instead. Gale (1995) believes that this change of wording reflects a genuine shift in how the individual is perceived within psychology, from object (probably a more accurate term than 'subject') to person.

PSYCHOLOGISTS AS SCIENTISTS/INVESTIGATORS

Human participants

The *Ethical Principles for Conducting Research with Human Participants* (BPS, 1990, 1993, 2000, for the rest of this chapter abbreviated to '*Ethical Principles*') identifies several guiding principles. Some of the most important issues addressed are:

- consent/informed consent
- deception
- debriefing
- protection of participants.

The introduction to the *Ethical Principles* states that:

> Psychological investigators are potentially interested in all aspects of human behaviour and conscious experience. However, for ethical reasons, some areas of human experience and behaviour may be beyond the reach of experiment, observation or other forms of psychological investigation. Ethical guidelines are necessary to clarify the conditions under which psychological research is acceptable ... [paragraph 1.2]

Psychologists are urged to encourage their colleagues to adopt the principles and ensure they're followed by all researchers whom they supervise (including GCSE, A/AS level, undergraduate, and postgraduate students):

> In all circumstances, investigators must consider the ethical implications and psychological consequences for the participants in their research. The essential principle is that the investigation should be considered from the standpoint of all participants; foreseeable threats to their psychological well-being, health, values or dignity should be eliminated ... [paragraph 2.1]

Consent and informed consent

According to the *Ethical Principles:*

> Participants should be informed of the objectives of the investigation and all other aspects of the research which might reasonably be expected to influence their willingness to participate – only such information allows informed consent to be given [paragraph 3.1] ... Special care needs to be taken when research is conducted with detained persons (those in prison, psychiatric hospital, etc.), whose ability to give free informed consent may be affected by their special circumstances ... [paragraph 3.5]

ASK YOURSELF...
- You may recall that in Perrin & Spencer's (1981) British replication of Asch's conformity experiment (see Chapter 26, page 446), some of the participants were young offenders on probation, with probation officers as stooges. According to paragraph 3.5, would this be acceptable today?

> Investigators must realise that they often have influence over participants, who may be their students, employees or clients: this relationship must not be allowed to pressurise the participants to take part or remain in the investigation ... [paragraph 3.6]

In relation to paragraph 3.6, it's standard practice in American universities for psychology students to participate in research as part of their course requirements. So, while they're free to choose which research to participate in, they're *not* free to opt out altogether.

Box 48.1 Is there more to informed consent than being informed?

- Although informed consent clearly requires being informed of the procedure, participants won't have full

knowledge until they've actually experienced it. Indeed, there's no guarantee that the investigators fully appreciate the procedure without undergoing it themselves.

- In this sense, it's difficult to argue that full prior knowledge can ever be guaranteed. How much information should be given beforehand? How much information can young children, elderly people, infirm or disabled people or those in emotional distress be expected to absorb?
- However, there's more to informed consent than just this 'informational' criterion. The status of the experimenter, the desire to please others and not let them down, the desire not to look foolish by withdrawing after the experiment is already under way, all influence the participant and seem to detract from truly choosing freely in a way that is assumed by the Ethical Principles.

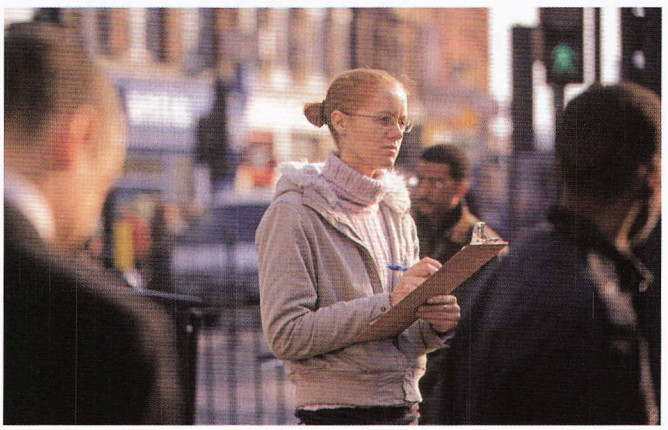
(Based on Gale, 1995)

Deception

The *Ethical Principles* states that:

> Intentional deception of the participants over the purpose and general nature of the investigation should be avoided whenever possible. Participants should never be deliberately misled without extremely strong scientific or medical justification. Even then there should be strict controls and the disinterested approval of independent advisors ... [paragraph 4.2]

The decision that deception is necessary should be taken only after determining that alternative procedures (which avoid deception) are unavailable. Participants must be *debriefed* at the earliest opportunity (see Critical Discussion 48.1).



Observational research: are those being observed giving their consent?

Debriefing

According to Aronson (1988):

> The experimenter must take steps to ensure that subjects leave the experimental situation in a frame of mind that is at least as sound as it was when they entered. This frequently requires post-experimental 'debriefing' procedures that require more time and effort than the main body of the experiment.

Where no undue suffering is experienced, but participants are deceived regarding the real purpose of the experiment:

> The investigator should provide the participant with any necessary information to complete their understanding of the nature of the research. The investigator should discuss with the participants their experience of the research in order to monitor any unforeseen negative effects or misconceptions ... [paragraph 5.1]

However:

> Some effects which may be produced by an experiment will not be negated by a verbal description following the research. Investigators have a responsibility to ensure that participants receive any necessary debriefing in the form of active intervention before they leave the research setting ... [paragraph 5.3]

ASK YOURSELF...

- Active intervention is more like a 'therapeutic' measure than just 'good manners'. Can you give examples of this second type of debriefing from both Milgram's and Zimbardo *et al.*'s experiments? (See Chapter 27.)

Protection of participants

> Investigators have a primary responsibility to protect participants from physical and mental harm during the investigation. Normally, the risk of harm must be no greater than in ordinary life, i.e. participants should not be exposed to risks greater than or additional to those encountered in their normal life styles. [paragraph 8.1]

Debriefing represents a major means of protecting participants where emotional suffering has occurred. They must also be protected from the stress that might be produced by disclosing confidential information without participants' permission. If participants have been seriously deceived, they have the right to witness destruction of any such records they don't wish to be kept. Results are usually made anonymous as early as possible by use of a letter/number instead of name (Coolican, 1994).

Ethical issues arising from the study of social influence

As we noted in Chapter 27, Milgram's obedience experiments have been criticised on ethical grounds, and they're often held up as examples of how psychological research with human participants *shouldn't* be done. They undoubtedly helped highlight the ethical dimension of psychological research, and to define specific principles, such as those discussed above. Milgram's and other experiments in the area of social influence are among the most controversial in the whole of psychology, and for all these reasons are often cited in the context of the ethics of research.

ASK YOURSELF...

- Are there any features of Milgram's experimental procedure that you'd consider unethical?
- One way of approaching this is to ask yourself what you'd have found objectionable/unacceptable, either during or after the experiment, if you'd been one of his participants.

Protection from harm

One of Milgram's fiercest critics was Baumrind (1964), who argued that the rights and feelings of Milgram's participants had been abused, and that inadequate measures had been taken to protect them from stress and emotional conflict. Milgram didn't deny that his participants did experience stress and conflict, but he argued that Baumrind's criticism assumes that the experimental outcome was expected. However, inducing stress *wasn't* an intended and deliberate effect of the experimental procedure. As Milgram (1974) noted:

> Understanding grows because we examine situations in which the end is unknown. An investigator unwilling to accept this degree of risk must give up the idea of scientific enquiry.

In other words, an experimenter cannot know what the results are going to be before the experiment is conducted.

We might accept Milgram's claim that there was no reason to believe that participants would need protection. However, once he observed the degree of distress in his first experiment, should he have continued with the research programme (17 more experiments)? To justify this, Milgram would have pointed out the following.

- At whatever shock level the experiment ended, the participant was reunited with the unharmed Mr Wallace, and informed that no shock had been delivered. In an extended discussion with Milgram, obedient participants were assured that their behaviour was entirely normal, and that the feelings of conflict and tension were shared by others. Disobedient participants were supported in their decision to disobey the experimenter. This was all part of a thorough debriefing or 'dehoaxing', which happened as a matter of course with every participant (see Critical Discussion 48.1).
- The experimenter didn't *make* the participant shock the learner (as Baumrind had claimed). Milgram began with the belief that every person who came to the laboratory was free to accept or reject the demands of authority. Far from being passive creatures, participants are active, choosing adults.

An APA ethics committee investigated Milgram's research shortly after its first publication in 1963 (during which time Milgram's APA membership was suspended). The committee eventually judged it to be ethically acceptable (Colman, 1987). In 1965, Milgram was awarded the prize for outstanding contribution to social psychological research by the American Association for the Advancement of Science.

According to Zimbardo (1973), the ethical concerns are even more pronounced in his own prison simulation experiment (see Chapter 27) than in Milgram's experiments:

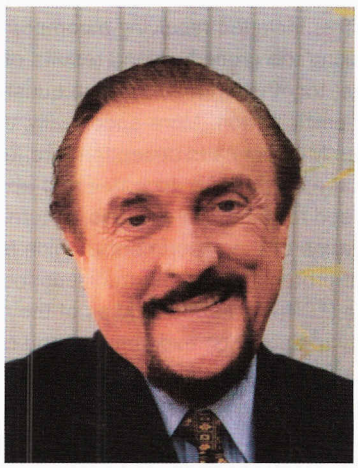
> Volunteer prisoners suffered physical and psychological abuse hour after hour for days, while volunteer guards were exposed to the new self-knowledge that they enjoyed being powerful and had abused this power to make other human beings suffer. The intensity and duration of this suffering uniquely qualify the Stanford prison experiment for careful scrutiny of violations of the ethics of human experimentation.

Savin (1973) argued that the benefits resulting from Zimbardo *et al.*'s experiment didn't justify the distress, mistreatment and degradation suffered by the participants – the end didn't justify the means.

ASK YOURSELF...

- How could Zimbardo *et al.* defend themselves against this criticism in a way that Milgram couldn't?

Their experiment was due to last for two weeks, but when it was realised just how intense and serious the distress, mistreatment and degradation were, it was ended after six days. However, it could be asked why it wasn't stopped even sooner!



Philip Zimbardo (born 1933)

Deception and informed consent

According to Vitelli (1988), almost all conformity and obedience experiments (and more than one-third of all social psychological studies) deceive participants over the purpose of the research, the accuracy of the information they're given, and/or the true identity of a person they

believe to be another genuine participant (or experimenter). Deception is considered unethical for two main reasons:

- it prevents the participant from giving informed consent – that is, agreeing to participate knowing the true purpose of the study and what participation will involve
- the most potentially harmful deception is involved in studies, like those of Milgram and Zimbardo *et al.*, in which participants learn (unsettling) things about themselves as people.

ASK YOURSELF...

- Given that it's important to understand the processes involved in conformity and obedience (the end), can deception be justified as a means of studying them?
- Identify the deceptions that were involved in the experiments of Asch (see Chapter 26), Milgram and Zimbardo *et al.*
- Do you consider any of these to be more serious/unethical than the others, and if so, why?

CRITICAL DISCUSSION 48.1 Can deception ever be justified?

- Most participants deceived in Asch's conformity experiments were very enthusiastic, and expressed their admiration for the elegance and significance of the experimental procedure (Milgram, 1992).
- In defence of his own obedience experiments, Milgram (1974) reported that his participants were all thoroughly debriefed. This included receiving a comprehensive report detailing the procedure and results of all the experiments, together with a follow-up questionnaire about their participation. More specifically, the 'technical illusions' (as Milgram calls deception) are justified because in the end they're accepted and approved of by those exposed to them. He saw this, in turn, as justifying the *continuation* of the experiments, which is relevant to the issue of protection from harm discussed above.
- Christensen (1988) reviewed studies of the ethical acceptability of deception experiments and concluded that as long as deception isn't extreme, participants don't seem to mind. Christensen suggests that the widespread use of mild forms of deception is justified, first because no one is apparently harmed, and second, because there seem to be few, if any, acceptable alternatives.
- Krupat & Garonzik (1994) reported that university psychology students who'd been deceived at least once as research participants didn't find the experience less enjoyable or interesting as a result. They also said they'd be less upset if they were lied to or misled again in the future (compared with those who hadn't been deceived).
- Other researchers have defended Milgram's use of deception on the grounds that without it, he'd have found results which simply don't reflect how people behave when they're led to believe they're in real situations (Aronson, 1988). In some circumstances, then, deception may be the best (and perhaps the only) way to obtain useful information about how people behave in complex and important situations.

As far as Zimbardo *et al.*'s prison simulation study is concerned, the only deception involved surrounded the arrest of the prisoners at the start of the experiment. They weren't told this would happen, partly because final approval from the local police force wasn't given until minutes before they decided to participate, and partly because the researchers wanted the arrests to come as a surprise.

As Zimbardo (1973) admits, 'This was a breach, by omission, of the ethics of our own informed consent contract', which told participants of everything that was going to happen to them (as far as this could be predicted). It was signed by every one of them, thus giving their permission for invasion of privacy, loss of civil rights, and harassment. Approval for the study had also been officially sought and received, in writing, from the body that sponsored the research, the Psychology Department at Stanford University, and the University Committee of Human Experimentation. This Committee didn't anticipate the extreme reactions that were to follow.

Like Milgram, Zimbardo *et al.* held debriefing sessions (both group and individual). All participants returned post-experimental questionnaires several weeks, then several months, later, then at yearly intervals. Many submitted retrospective diaries and personal analyses of the effects of their participation:

> We are sufficiently convinced that the suffering we observed, and were responsible for, was stimulus bound and did not extend beyond the confines of that basement prison ... (Zimbardo, 1973)

Widening the ethical debate: the ethics of socially sensitive research (SSR)

What is SSR?

According to Sieber & Stanley (1988), SSR refers to:

> ... studies in which there are potential social consequences or implications, either directly for the participants in the research or for the class of individuals represented by the research ...

Two examples they give are:

1. a study that examines the relative merits of daycare for infants versus full-time care by the mother can have broad social implications, and thus can be regarded as socially sensitive (see Chapter 32)

2. studies aimed at examining the relationship between gender and mathematical ability, which can also have significant social implications (see Chapter 47).

Sieber (2004) gives the further examples of domestic violence and teenagers and smoking. In research on domestic violence, the victim may experience severe distress at recounting being battered. The assailant may learn of the research and, in anger, harm the participant or the researcher – or the data may be subpoenaed in an investigation of the assailant. Most teenagers smoke without their parents' knowledge, yet research involving minors (usually under 16) should be done with parental permission.



Smoking teenagers: what should investigators do?

The American Psychological Association's (APA) *Ethical Principles in The Conduct of Research* (1982) acknowledges the social implications of research as follows:

> The scientific enterprise creates ethical dilemmas. Scientific knowledge and techniques that can be used for human betterment can be turned to manipulative and exploitative purposes as well. Just as results of research in atomic physics can be used for the treatment of cancer as well as for destructive weapons, so methods discovered to reduce prejudice towards minority groups, to eliminate troublesome behaviour problems, or to facilitate learning in school may also be used to manipulate political allegiance, to create artificial wants, or to reconcile the victims of social injustice to their fate ...

In other words, psychological research (like other scientific research) is a 'double-edged sword'. It can be used to benefit those being studied, or against their interests and for the benefit of those with social, economic and political power. There's nothing 'neutral' about research (see above and Chapters 3 and 47).

Protecting the individual versus harming the group

The debate about the ethics of psychological research usually focuses on the vulnerability of individual participants and the responsibility of psychologists to ensure they don't suffer in any way from their participation. 'Protection of participants' is one of the specific principles included in the *Ethical Principles,* but the principles *as a whole* are designed to prevent any harm coming to the participant, or the avoidance of overt 'sins' (Brown, 1997).

Sometimes the principles designed to protect individual participants can throw up problems and dilemmas for the researcher. This is especially likely in the case of SSR (and could even be considered a defining feature of SSR). Confidentiality is an example, and is described in Box 48.2 in relation to AIDS.

Box 48.2 Protecting the individual versus protecting society

- An example of SSR where the conduct of research and the treatment of participants can cause ethical dilemmas is investigation of patterns of transmission of AIDS.
- The way in which appropriate research groups are identified (such as waiting outside gay bars) can breach *privacy needs.*
- *Confidentiality* can also be a major problem. If a participant reveals that s/he has AIDS, continues to have unprotected sex and withholds the fact that s/he has AIDS from partners, what is the appropriate role of the researcher? Should they maintain the promise of confidentiality, reveal the information to the authorities or try to contact the participant's partner(s) directly (Sieber & Stanley, 1988)?
- Melton & Gray (1988) make a strong general case for tipping the balance towards respecting the confidentiality rights of the participant. Ultimately, this approach will protect the integrity of data collected by future researchers. In other words, if individuals from a relatively cohesive research population (such as gay men/lesbians) become aware of breaches of confidentiality, this is likely to be conveyed to other members of their group. As a result, they'll be less willing to participate in other studies or to give truthful information if they do.

Brown (1997) argues that formal codes focus too narrowly on risks to the individual participant, in the specific context of the investigation. They neglect broader questions about the risks to the *group* the participant belongs to. These groups can include women, ethnic minorities and other subcultural groups, as well as non-western cultures (countries or national cultures). So the different examples of gender and culture bias (see Chapter 47) become relevant to a discussion of ethics. To the extent that these biases (and the underlying values and beliefs) are harmful to particular groups, they are ethical issues. In this sense, any comparison between

women and men that is made from an alpha bias perspective is *socially sensitive*. Equally, any comparison between blacks and whites is socially sensitive. A much-debated example is the study of racial differences in IQ (see below).

ASK YOURSELF...

- Re-read Chapter 47. Try to identify some fundamental values and biases that are potentially damaging to particular social groups.
- In what ways are these values/biases harmful to these groups?

CRITICAL DISCUSSION 48.2 The ethics of ethical codes: underlying assumptions

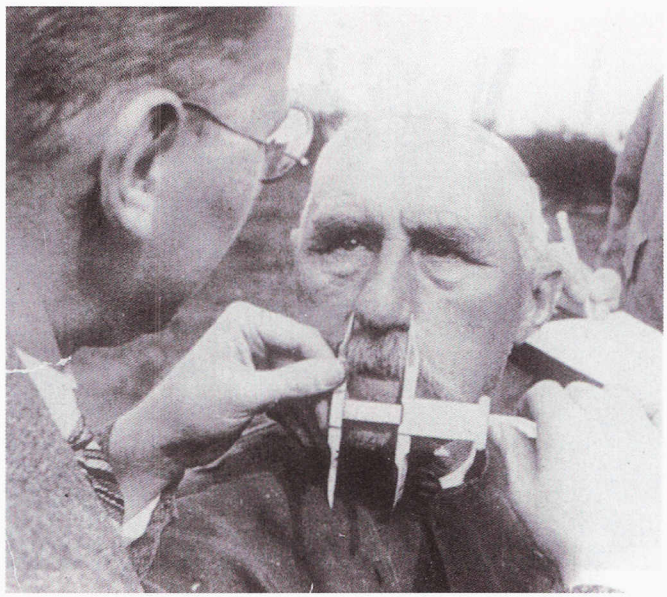
- According to Brown (1997), a core assumption underlying ethical codes is that what psychologists do as researchers, clinicians, teachers, and so on, is basically harmless and inherently valuable, because it's based on 'science' (defined as positivism: see Chapter 3). Consequently, it's possible for a psychologist to conduct technically ethical research but still do great harm. For example, a researcher can adhere strictly to 'scientific' research methodologies, get technically adequate informed consent from participants (and not breach any of the other major prescribed principles), but still conduct research that claims to show the inferiority of a particular group. Because it's conducted according to 'the rules' (both methodological and ethical), the question of whether it's ethical in the broader sense to pursue such matters is ignored.
- For example, neither Jensen (1969) nor Herrnstein (1971) was ever considered by mainstream psychology to have violated psychology's ethics by the questions they asked regarding the intellectual inferiority of African-Americans (see Chapter 41). Individual black participants weren't harmed by being given IQ tests, and may even have found them interesting and challenging.
- However, Brown (1997) argues that the way the findings were interpreted and used:

  ... weakened the available social supports for people of colour by stigmatising them as genetically inferior, thus strengthening the larger culture's racist attitudes. Research ethics as currently construed by mainstream ethics codes do not require researchers to put the potential for this sort of risk into their informed consent documents ...

- Jensen's and Herrnstein's research (highlighted by Herrnstein and Murray, in *The Bell Curve,* 1994) has profoundly harmed black Americans. Ironically, the book has received much methodological criticism, but only black psychologists (such as Hilliard, 1995, and Sue, 1995) have raised the more fundamental question of whether simply conducting such studies might be ethically dubious. As Brown observes:

  To ask this question about the risks of certain types of inquiry challenges science's hegemony as the source of all good in psychology.

- Herrnstein and Murray, Rushton (1995), Brand (cited in Richards, 1996a) and others, like the Nazi scientists of the 1930s, claim that the study of race differences is a purely 'objective' and 'scientific' enterprise (Howe, 1997).



Nazi scientist conducting 'objective' scientific research

So, psychologists might believe that (a) it's unethical to deceive individual black or female participants about the purposes of some particular study, but (b) it's ethically acceptable to use the results to support the claim that blacks or women are genetically inferior. This narrow view of ethics makes it an ineffective way of guiding research into socially sensitive issues (Howitt, 1991). Formal codes continue to focus narrowly on risks to the individual participant, in the specific context of the investigation, but neglect questions about the risks to the group to which the participant belongs:

As long as research ethics avoid the matter of whether certain questions ethically cannot be asked, psychologists will conduct technically ethical research that violates a more general ethic of avoiding harm to vulnerable populations ... (Brown, 1997)

The BPS *Code of Conduct* (2000) comprises several sections (apart from the *Ethical Principles*). These include (a) 'Guidelines for psychologists working with animals' (see below), (b) 'Guidelines on advertising the services

offered by psychologists', and (c) 'Guidelines for penile plethysmography (PPG) usage'. The last of these refers to the measurement of sexual arousal and involves apparatus being attached to the penis and sexual stimuli being presented. This might be used in the context of assessing paedophilia and sexual dysfunction – so its use is highly sensitive.

Protecting the individual versus benefiting society

As we've seen, the questions psychologists ask are limited and shaped by the values and biases of individual researchers. We've also seen that the research they carry out is constrained by ethical considerations. But it's also constrained by considerations of methodology (what it's possible to do, practically, when investigating human behaviour and experience). For example, in the context of intimate relationships, the laboratory experiment is, by its very nature, extremely limited in the kinds of questions it allows psychologists to investigate (Brehm, 1992: see Chapter 28).

Conversely, and just as importantly, there are certain aspects of behaviour and experience that could be studied experimentally, although it would be unethical to do so (such as jealousy between partners). As Brehm says:

> All types of research in this area involve important ethical dilemmas. Even if all we do is to ask subjects to fill out questionnaires describing their relationships, we need to think carefully about how this research experience might affect them and their partner.

So, what it may be *possible* to do may be *unacceptable,* but equally, what may be *acceptable* may *not* be possible. As we saw earlier, focusing on protection of individual participants can work to the detriment of whole groups. But, by the same token, it may discourage psychologists from carrying out *socially meaningful* research (what Brehm, 1992, calls the *ethical imperative*) which may, potentially, improve the quality of people's lives. Social psychologists in particular have a two-fold ethical obligation, to individual participants and to society at large (Myers, 1994). This relates to discussion of psychology's aims as a science (see Chapters 1 and 3). Similarly, Aronson (1992) argues that social psychologists are:

> ... obligated to use their research skills to advance our knowledge and understanding of human behaviour for the ultimate aim of human betterment. In short, social psychologists have an ethical responsibility to the society as a whole.

ASK YOURSELF...

- Before reading on, try to think of some examples of how research findings you're familiar with might be used to benefit people in general. You may find it useful to focus on social psychology.

Box 48.3 An example of the benefits of social psychological research

- In many bystander intervention studies (e.g. Latané & Darley, 1968: see Chapter 30), people are deceived into believing that an 'emergency' is taking place. Many of Latané and Darley's participants were very distressed by their experiences, especially those in the experiment in which they believed another participant was having an epileptic fit. Yet when asked to complete a post-experimental questionnaire (which followed a very careful debriefing), all said they believed the deception was justified and would be willing to participate in similar experiments again. None reported any feelings of anger towards the experimenter.
- Beaman *et al.* (1978) built on these earlier experiments. They used a lecture to inform students about how other bystanders' refusals to help can influence both one's own interpretation of an emergency and feelings of responsibility.
- Two other groups of students heard either a different lecture or no lecture at all. Two weeks later, as part of a different experiment in a different location, the participants found themselves (accompanied by an unresponsive stooge) walking past someone who was slumped over or sprawled under a bike. Of those who'd heard the lecture about helping behaviour, 50 per cent stopped to offer help compared with 25 per cent who hadn't.
- This suggests that the results of psychological research can be used to make us more aware of influences on behaviour, making it more likely that we'll act differently armed with that knowledge from how we might otherwise have done. In the case of bystander intervention, this 'consciousness-raising' is beneficial in a tangible way to the person who's helped. Being more sensitive to the needs of others, and feeling satisfied with having helped another person, may also be seen as beneficial to the helper.

The 'double obligation dilemma' (DOD)

The dilemma faced by social psychologists (regarding their obligations to society and individual participants) is greatest when investigating important areas such as conformity, obedience and bystander intervention (Aronson, 1992). In general, the more important the issue, (i) the greater the potential benefit for society, and (ii) the more likely an individual participant is to experience distress and discomfort. This is because the more important the issue, the more essential the use of *deception* becomes (see above).

Psychologists want to know how people are likely to behave if they found themselves in that situation *outside* the laboratory. This raises several crucial methodological questions. But the key *ethical* issue hinges on the fact that the use of deception (a) contributes enormously (and perhaps irreplaceably) to our understanding of human

behaviour (helping to satisfy the obligation to society), and at the same time (b) significantly increases individual participants' distress (detracting from the responsibility to protect individuals).

According to Sieber & Stanley (1988):

> The likelihood that psychological research will raise socially sensitive issues is great and often unavoidable if useful theory, knowledge, and applications are to be achieved. Restricting psychology to those areas unlikely to raise socially sensitive issues may limit researchers in psychology to examining relatively unimportant problems.

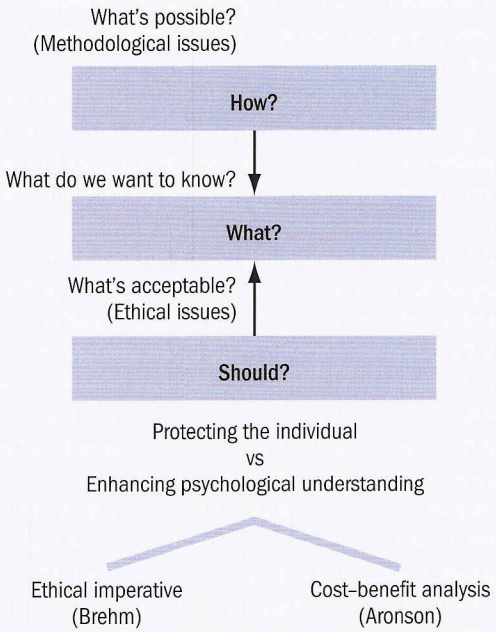


Figure 48.2 Ethical and methodological constraints on the questions that psychologists can try to answer through the research process

'Socially important' and 'socially sensitive' seem to go together, two sides of a coin. Psychologists are obliged to confront the ethical issues raised by SSR. But equally, as Sieber and Stanley say:

> ... shying away from controversial topics, simply because they are controversial, is also an avoidance of responsibility.

Similarly, Milgram (1992) believes that if the experimental creation of stress or conflict were excluded on principle, and only studies that produced positive emotions were allowed, this would produce:

> ... a very lopsided psychology, one that caricatured rather than accurately reflected human experience.

Box 48.4 Some proposed solutions to the 'double obligation dilemma'

- Having accepted that, under certain circumstances, deception is permissible, most psychologists still advocate that it shouldn't be used unless it's considered essential (Milgram, 1992; Aronson, 1992). This is consistent with the *Ethical Principles*.
- Aronson (1992) advocates a *cost–benefit analysis* (CBA): weighing how much 'good' (benefits to society) will derive from doing the research against how much 'bad' will happen to the participants (but see Critical Discussion 48.3).
- Two compromise solutions to the problem of not being able to obtain informed consent are *presumptive consent* (of 'reasonable people') and *prior general consent*.
- In *presumptive consent*, the views of many people are obtained about an experimental procedure's acceptability. These people wouldn't participate in the actual experiment (if it went ahead), but their views could be taken as evidence of how people in general would react to participation.
- *Prior general consent* could be obtained from people who might, subsequently, serve as experimental participants. Before volunteering to join a pool of research volunteers, people would be explicitly told that sometimes participants are misinformed about a study's true purpose and sometimes experience emotional stress. Only those agreeing would be chosen (Milgram, 1992). This is a compromise solution, because people would be giving their 'informed consent' (a) well in advance of the actual study, (b) only in a very general way, and (c) without knowing what specific manipulations/deceptions will be used in the particular experiment in which they participate. It seems to fall somewhere between 'mere' consent and full 'informed consent' (and could be called *semi- or partially informed consent*).

CRITICAL DISCUSSION 48.3 Some problems with cost–benefit analysis (McGhee, 2001)

- Both costs and benefits are multiple and subjective, some are immediate, others are longer-term, and there are difficulties in 'adding them up'.
- Every psychology experiment (like every complex social activity) has multiple outcomes. It's difficult, if not impossible, to identify them, let alone assess them. Even if they can be assessed individually, they need to be aggregated in some way, because we're trying to assess the experiment as an overall package. For example, how much is deception 'worth' relative to the 'new data'?
- Ultimately, costs and benefits can only be subjectively assessed. Each individual values different kinds of experiences (gains and losses) differently. Indeed, one person's cost might be another's benefit.
- In theory-driven research such as Milgram's (as opposed to applied research), costs tend to be real, while benefits tend to be potential.

The distress to the participants in Milgram's studies is real but the prospect of reducing the possibility of another Auschwitz is remote – even if extraordinarily desirable.

- Similarly, although the benefits may outweigh the costs, for individual participants it's mostly all costs (time, effort, stress, and occasional humiliation and deception). Any tangible or practical benefits are unlikely to be for them. So, the costs are linked to specific people, while the identity of those who will benefit is much less obvious.
- We need to decide before a study takes place whether or not it should go ahead, but very often the full range and extent of costs and benefits will only become apparent retrospectively.
- Finally, who should have the right to decide whether the benefits outweigh the costs?

Non-human (animal) subjects

The BPS Scientific Affairs Board published its *Guidelines for the Use of Animals in Research* (1985), in conjunction with the Committee of the Experimental Psychological Society. (The *Guidelines* published in 2000 are an updated version of the 1985 document.) It offers a checklist of points which investigators should carefully consider when planning experiments with living non-humans. Researchers have a general obligation to:

> ... avoid, or at least to minimise, discomfort to living animals ... discuss any future research with their local Home Office Inspector and colleagues who are experts in the topic ... seek ... widespread advice as to whether the likely scientific contribution of the work ... justifies the use of living animals, and whether the scientific point they wish to make may not be made without the use of living animals ... (BPS, 1985)

These warnings raise two fundamental questions: (a) how do we know non-humans suffer, and (b) what goals can ever justify subjecting them to pain, suffering and even death?

How do we know that animals suffer?

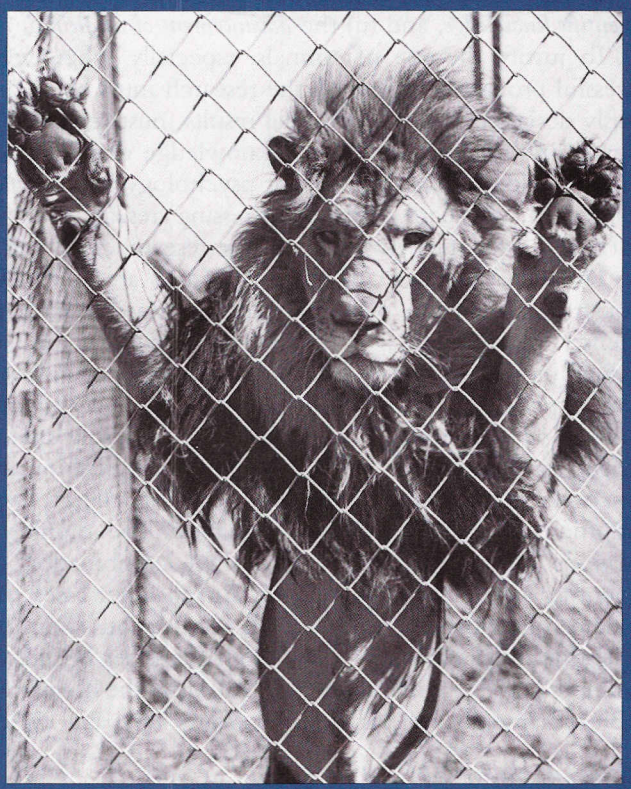
ASK YOURSELF...

- Identify examples of experiments involving animals in which they suffered pain and distress.
- Try to specify in what ways suffering occurred.

Box 48.5 Some criteria for judging animal suffering

- Disease and injury are generally recognised as major causes of suffering. Consequently, research such as Brady's (1958) 'executive monkey' experiments would probably not even be debated in the current climate (Mapstone, 1991). Brady attached pairs of monkeys to an apparatus which gave electric shocks, such that one monkey (the 'executive': see Chapter opening) could prevent the shock by pressing a lever, but the other couldn't. The former developed ulcers and eventually died.
- Even if we're sure that animals aren't suffering physically, their confinement might cause mental suffering not affecting their external condition (Dawkins, 1980). For example, apparently healthy zoo and farm animals often show bizarre behaviours.
- We must find out about animal suffering by careful observation and experimentation. Because different species have different requirements, lifestyles, and, perhaps, emotions, we cannot assume that we know about their suffering or wellbeing without studying them species by species (Dawkins, 1980).
- Drawing on the Institute of Medical Ethics (IME) Working Party's report (Haworth, 1992), Bateson (1986, 1992) has proposed criteria for assessing animal suffering, including:
  (a) possessing receptors sensitive to noxious or painful stimulation, and
  (b) having brain structures comparable to the human cerebral cortex.

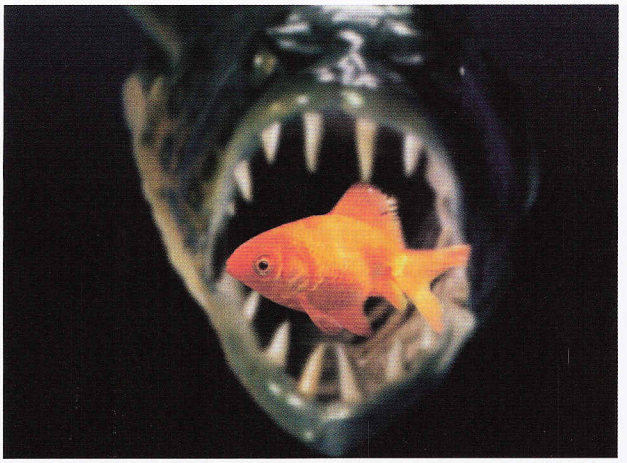
Bateson (1992) tentatively concludes that insects probably don't experience pain, whereas fish and octopi probably do. However, the boundaries between the presence and absence of pain are 'fuzzy'.



A caged lion 'climbing the walls'

ASK YOURSELF...

- Try to formulate arguments for and against the use of animals in research.
- This shouldn't be confined to psychological research, since much of the debate takes place in relation to medicine, pharmacology, and so on.



Is the unsuspecting goldfish going to feel pain?

How can we justify experiments with non-humans?

The question of whether or not animals suffer wouldn't arise if animals weren't being used in experiments in the first place. According to Gray (1987), the main justifications for animal experimentation are (i) the *pursuit of scientific knowledge,* and (ii) the *advancement of medicine.*

To justify the use of animals, especially when very stressful procedures are used, the research must be rigorously designed and the potential results must represent a significant contribution to our knowledge of medicine, pharmacology, biopsychology, or psychology as a whole. This is a safeguard against distressing research being carried out for its own sake, or at the researcher's whim.

The *Guidelines* state that if the animals are confined, constrained, harmed, or stressed in any way, the experimenter must consider whether the knowledge to be gained justifies the procedure. Some knowledge is trivial, and experiments mustn't be done simply because it's possible to do them. To take the executive monkey experiments again (see Box 48.5), the medical justification (to discover why business executives develop ulcers) was insufficient to justify their continuation. The monkeys' obvious suffering superseded even the combination of scientific and medical justification. But in other cases, the medical justification may be much less obvious than the scientific justification. An example of the latter is Olds & Milner's (1954) electrical self-stimulation of the brain/ES-SB experiments with rats (see Key Study 9.5, page 150).

Safeguards for animal subjects

Whatever practical application Olds and Milner's ES-SB experiments may have subsequently had (such as pain/anxiety relief in psychotics, epileptics and cancer patients), they don't seem to have been conducted with such human applications in mind. Can the scientific knowledge gained about ES-SB as a very powerful positive reinforcer on its own justify the rats' eventual 'sacrifice'? The very least required of researchers is that the minimum of suffering is caused, both during and following any surgical procedure and by any electric shock or food deprivation, the most objected-to treatments (Gray, 1987).

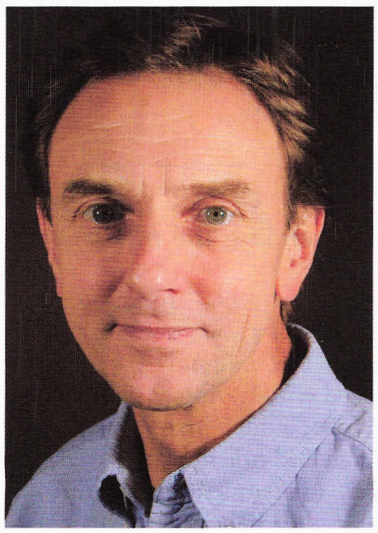
Box 48.6 Some safeguards for animal subjects

- Gray (1987) claims that food deprivation isn't a source of suffering, and that rats (the most commonly used experimental subjects in psychology) are either fed once a day when experimentation is over, or maintained at 85 per cent of their free-feeding (*ad lib*) body weight. Both are actually healthier than allowing them to eat ad lib.
- Electric shock may cause *some* but not extreme pain (based on observations of the animals' behaviour). The level permitted is controlled by the Home Office (HO) inspectors, who monitor implementation of The Animals (Scientific Procedures) Act (1986). The average level used in the UK is 0.68 milli-amperes, for an average of 0.57 seconds. This produces an unpleasant tickling sensation in humans.
- Procedures causing pain or distress are illegal, unless the experimenter holds an HO licence and relevant certificates. Even then, these procedures should be carried out only if there are no alternative ways of conducting the experiment. Similarly, it's illegal in the UK to perform any surgical or pharmacological procedure on vertebrates (or one invertebrate – the octopus) without an HO licence and relevant certification. Such procedures must be performed by experienced personnel.
- The *Guidelines* stress the importance of understanding species differences in relation to (i) caging and social environment, (ii) the stress involved in marking wild animals for identification or attaching them with radio transmitters, and (iii) the duration of food/drink deprivation. Field workers should disturb non-humans as little as possible. Even simple observation of animals in the wild can have marked effects on their breeding and survival.
- The number of animals used in laboratory experiments is declining. For example, in the UK, the Netherlands, Germany and several other European countries, the numbers have fallen by half since the 1970s (Mukerjee, 1997). However, the UK still used 2.73 million animals in 2002 (84 per cent of which were mice, rats and other rodents) and is the largest user in the European Union (Brown, 2004). There's also been a sharp rise in genome-related research, which is threatening to reverse this downward trend (Hawkes, 2000b). But putting this in perspective, over 700 million non-humans are killed for food every year (*Nursing Times*, 1996).
- The UK, Australia, Germany and several other countries require a utilitarian *cost–benefit analysis* to be performed before any animal experiment can proceed (Mukerjee, 1997; Rowan, 1997). This involves weighing up animal pain, distress, and death against acquisition of new knowledge and the development of new medical therapies for humans. Interestingly, most non-scientists also seem to perform some kind of cost-benefit analysis (Aldhous *et al.*, 1999: see Critical Discussion 48.4).

Despite these safeguards, the very existence of the 1986 Act condones the use of animals. Legally, the Act aims to spare animals 'unnecessary' pain and distress; implicitly, the law accepts that some research will involve suffering for the non-human subjects. Under the Act, applications for project licences have to say whether they've considered alternatives to using non-humans, and in granting the licence the Home Secretary must weigh up the likely benefit of the research against the adverse effects on the animal subjects. However, there's no remit to consider whether the proposed research is truly necessary (Seymour, 1996). Also, the Medicines Act (1968) requires that all new medicines undergo a range of tests on animals before they can be tested on humans (Lyall, 1993: see Critical Discussion 48.4).

A list of 110 British scientists has called for the Home Office to speed up the process of gaining approval for animal experiments: their complaint is that the procedure is so long-winded that foreign scientists will take all the prizes for medicine, biotechnology and drug research (Hawkes, 2000a). The list includes Blakemore (see Chapter 16), Gray (see below), Greenfield (see Chapters 7 and 8), and Iversen (see Chapter 4).

The *Guidelines for Psychologists Working with Animals* (BPS, 2000) point out that research isn't the only reason psychologists work with animals (though, not surprisingly, research is what has caused the most controversy and media attention). Animals are sometimes used in practical teaching within psychology degree courses, and increasingly they're being used in various forms of psychological therapy. The latter includes companion animal visiting schemes in hospitals or hospices, pet-keeping within prison rehabilitation schemes, and in behaviour therapy for the treatment of specific animal phobias. Psychologists may also be asked for advice on therapy for animals whose behaviour is disordered or inconvenient, and in training animals for commercial purposes (such as appearing in TV commercials).



Colin Blakemore (born 1944)

The *Guidelines* state that in all these non-research situations:

> ... considerations concerning the general care and welfare of therapeutic animals are similar to those ... for experimental animals. In addition, however, a number of specific considerations can be noted ...

These include issues relating to the temperament and training of the animals, and their need for protection and rest.



Kirby, a Pet Assisted Therapy (PAT programme) dog, visiting hospital patients in Los Angeles, California

The medical justification argument

The strongest argument for animal experiments is undoubtedly the advancement of medical knowledge and treatments. However, scientific and ethical issues can easily become confused. Showing what's been achieved in a practical sense from such experiments represents only a *minimum requirement* for their justification. For example, only if it can be convincingly shown that many drugs used in the treatment of human diseases (including anti-cancer drugs, AIDS treatments, anti-epileptic and antidepressant drugs) have been developed using animals – and couldn't have been developed otherwise – can the ethical debate begin.

CRITICAL DISCUSSION 48.4 Are animal experiments scientifically useful?

The case for

- Animal experiments have played a crucial role in the development of modern medical treatments, and will continue to be necessary as researchers seek to alleviate existing ailments and respond to the emergence of new diseases.
- The causes of, and vaccines for, dozens of infectious diseases, including diphtheria, tetanus, rabies, whooping cough, tuberculosis, poliomyelitis, measles, mumps, and

rubella, have been determined largely through animal experimentation. It's also led to the development of antibacterial and antibiotic drugs.
- Animal research has also been vital to areas of medicine such as open-heart surgery, kidney disease, organ transplantation, diabetes, malignant hypertension, and gastric ulcers.
- There are no basic differences between the physiologies of laboratory animals and humans. Both control their internal biochemistry by releasing the same basic endocrine hormones, both send out similar chemical transmitters from neurons in the CNS and PNS (see Chapter 4), and both react in the same way to infection or tissue injury. Animal models of disease (see below) are intended to provide a means of studying a particular procedure (such as gene therapy for cystic fibrosis).

The case against

- Through genetic manipulation, surgical intervention or injection of foreign substances, researchers produce diseases in laboratory animals that 'model' human diseases. However, evolutionary pressures have produced innumerable subtle differences between species, and the knock-on effect of applying a stimulus to one particular organ system on the animal's overall physiological functioning is often unpredictable and not fully understood.
- Important medical advances have been delayed because of misleading results from animal experiments. Cancer research is especially sensitive to physiological differences between species. Rats and mice, for example, synthesise about 100 times the recommended daily allowance of vitamin C believed to help the (human) body ward off cancer. Penicillin is toxic to guinea-pigs, while morphine stimulates cats (the opposite of the human response).
- The stress of handling, confinement, and isolation alters an animal's physiology, introducing a variable that makes extrapolating results to humans even more difficult. Laboratory stress can increase animals' susceptibility to infectious disease and certain tumours, as well as influencing hormone and antibody levels.
- Animal experiments to test the safety of drugs are confounded by the fact that tests on different species often produce conflicting results.

(Based on Barnard & Kaufman, 1997; Botting & Morrison, 1997; Mukerjee, 1997; Sawyer, 1996)

Green (1994), Carlson (1992), and many other biopsychologists believe that the potential benefits of animal experiments is sufficient to justify their use.

ASK YOURSELF...

- What do you think of the claim that particular non-human species, namely those that are closest to us in an evolutionary sense, should be given 'special consideration' in the context of animal experiments?

CRITICAL DISCUSSION 48.5 Chimpanzees, AIDS and moral responsibility

- What will become of several hundred research 'veterans' that are now considered to be of no further value to medical science? Their plight is a direct consequence of their genetic similarity to human beings, which makes them ideal models for the study of several diseases afflicting people worldwide, and the quest to find vaccines against them.
- During the 1970s, chimpanzees started to be used in large numbers in biomedical research in the USA. This came with the development of vaccines against hepatitis B, and later in a still-unrealised search for a hepatitis C vaccine.
- Some scientists lobbied for retirement facilities for the chimpanzees, but many began seriously to consider euthanasia as the only practical way to alleviate the crisis. Ironically, it was the AIDS epidemic in the mid-1980s which 'saved' the very chimpanzees that were 'used up'. Once again, they became 'surrogate human beings', this time in the development of HIV vaccines.
- Yet by the mid-1990s, scientists began to turn to human volunteers for the initial testing of HIV vaccines, leaving large numbers of 'redundant' chimpanzees, which have a lifespan of up to 40 years. A report by the US National Research Council (1997) concluded that chimpanzees should be afforded special consideration, on ethical grounds, over other non-humans, and that euthanasia isn't an acceptable means of population control.
- This is consistent with one of the findings of a MORI poll conducted in the UK, namely that people are more likely to oppose experiments on monkeys than those on mice. Only those experiments designed to test or develop drugs to treat childhood leukaemia were seen as justifying monkeys' suffering (Aldhous *et al.*, 1999). Research using great apes (gorillas, chimpanzees, bonobos, and orang-utans) was banned in 1998 (Brown, 2004).
- Wise (2000) argues that animals should have full rights under the law. Goodall describes Wise's book as the 'animals' Magna Carta' (Mee, 2000).

(Based on Mahoney, 1998)

Speciesism: extending the medical justification argument

According to Gray (1991), most people (both experimenters and animal rights activists) would accept the ethical principle that inflicting pain is wrong. But we're sometimes faced with having to choose between different ethical principles, which may mean having to choose between human and non-human suffering. Gray believes that *speciesism* (discriminating against and exploiting animals because they belong to a particular [non-human] species: Ryder, 1990) is justified, and argues that:



Not only is it not wrong to give preference to the interests of one's own species, one has a duty to do so.

Such a moral choice involves establishing a *calculus* (Dawkins, 1990), which pits the suffering of non-humans against the human suffering which the former's use will alleviate. For Gray (1991):

In many cases the decision not to carry out certain experiments with animals (even if they would inflict pain or suffering) is likely to have the consequence that more people will undergo pain or suffering that might otherwise be avoided.

One of the problems associated with the pro-speciesism argument is that medical advance may become possible only after extensive development of knowledge and scientific understanding in a particular field (Gray, 1991). In the meantime, scientific understanding may be the only specific objective that the experiment can readily attain. It's at this interim stage that the suffering imposed on experimental animals will far outweigh any (lesser) suffering eventually avoided by people, and this is at the core of the decisions that must be made by scientists and ethical committees.

PSYCHOLOGISTS AS PRACTITIONERS

Clinical psychologists (as well as educational psychologists, psychotherapists, psychiatrists, social workers, nurses, counsellors, and other professionals) are concerned with bringing about *psychological change.* It's in their capacity as agents of change that clinical psychologists face their greatest ethical challenges (see Chapter 1).

ASK YOURSELF...

- Consider some of the ethical issues faced by psychologists attempting to change other people's behaviour.
- Some are of a general nature, such as freedom versus determinism (see Chapter 49), others will overlap with ethical principles governing research (such as confidentiality and informed consent), and yet others may be specific to particular therapeutic approaches (see Chapter 45).

According to Fairbairn & Fairbairn (1987), clinical psychologists:

... must decide how they will interact with those who seek their help; for example, whether in general they will regard them as autonomous beings with rights and responsibilities, or rather as helpless individuals, incapable of rational choice.

Fairbairn and Fairbairn argue that two quite common beliefs likely to detract from an explicit consideration of professional ethics and values in psychological practice are that (a) psychology is a value-free science, and (b) therapists should be value-neutral or 'non-directive'.

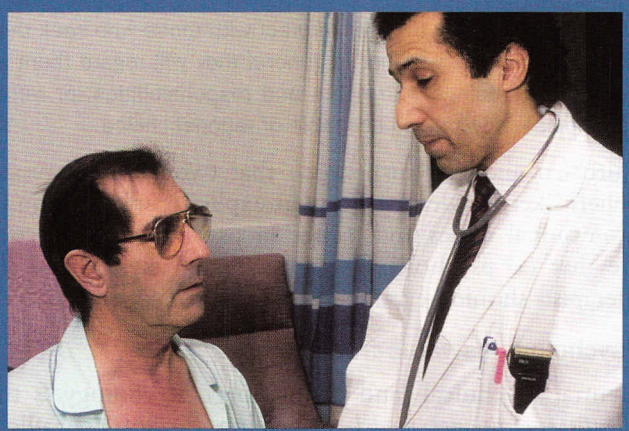
Psychology as value-free science

Central to clinical (and counselling) psychology is the *scientist–practitioner model* of helping (Dallos & Cullen, 1990). This sees clinical psychology as being guided by, and operating within, the framework of the general scientific method (see Chapters 3 and 45). If clinical psychologists view clinical psychology as having firm foundations in positivist science, they may disregard ethics because these aren't amenable to objective consideration. But even if the psychological knowledge used in clinical practice was always the result of the application of an objective scientific method, *moral* questions of an interpersonal kind are bound to arise at the point at which it's *applied* (Fairbairn & Fairbairn, 1987).

This distinction between possession of knowledge and its application ('science' versus 'technology') is fundamental to any discussion of ethics, because it's related to the notion of *responsibility.* Presumably, clinical psychologists *choose* which techniques to use with clients and how to use them. The mere existence (and even the demonstrated effectiveness) of certain techniques doesn't in itself mean that they *must* be used. Similarly, the kind of research which clinical psychologists consider worth doing (and which then provides the scientific basis for the use of particular techniques) is a matter of choice, and reflects views regarding the nature of people and how they can be changed (see Chapters 1 and 2).

Box 48.7 Criticisms of scientific behaviour therapy and modification

- Based on the scientist-practitioner model, behaviour therapy and modification tend to devalue and thereby dehumanise their clients by treating people, for 'scientific' purposes, as if they were 'organisms' as opposed to 'agents', helpless victims of forces outside their control.
- This criticism also applies to medical psychiatry and classical psychoanalysis, except that both see the controlling forces as being internal (organic abnormalities or intrapsychic forces, respectively) as opposed to environmental contingencies (see Chapters 2 and 45).



This passive patient looks vacantly at the doctor – the expert and authority figure

- Clients soon come to believe that they're abnormal, helpless, and also worthless, because this is part of the culture-wide stereotype of 'mental illness' (see Chapter 43). Negative self-evaluation and passivity characterise many, if not most, mental health clients, who think and behave like passive organisms. The solution lies in helping people recover, or discover, their agency.

(Based on Trower, 1987)

Therapists as value-neutral and non-directive

This second major issue is about the therapist or psychologist functioning as something less than a complete person within the therapeutic situation. Providing help and support in a non-directive, value-free way is a tradition for psychotherapists and counsellors (Fairbairn & Fairbairn, 1987). However, such an approach may seem to require remaining aloof and distant from the client which, in turn, may entail not treating the client with respect as a person, since this requires the therapist to recognise that the client is a person like him- or herself.

ASK YOURSELF...

- Is there a difference between, say, client-centred therapy and psychoanalysis in terms of this possible aloofness and failure to treat the client 'respectfully'? (See Chapter 45.)



Carl Rogers (right) in a group therapy session

ASK YOURSELF...

- Do you believe that it's possible for therapists not to have any influence over their clients/patients?

The influence of the therapist

Adopting what's thought to be a value-free position in therapy may lead therapists to deny the importance or influence of their own moral values, which are often hidden in therapy. This kind of influence is much more subtle and covert than the coercion that can operate on hospitalised psychiatric patients, even voluntary ones. The in-patient is subjected to strong persuasion to accept the treatment recommendations of professional staff. As Davison & Neale (1994) observe:

> Even a 'voluntary' and informed decision to take psychotropic medication or to participate in any other therapy regimen is often (maybe usually) less than free.

CRITICAL DISCUSSION 48.6 Therapist influence in psychodynamic and behaviour therapy

- The issue of the therapist's influence on the patient/client has been central to a long-standing debate between traditional (psychodynamic) psychotherapists and behaviour therapists (who are usually clinical psychologists by training: see Chapter 45).
- Psychotherapists regard behaviour therapy as unacceptable (even if it works), because it's manipulative and demeaning of human dignity. By contrast, they see their

own methods as fostering the autonomous development of the patient's inherent potential, helping the patient to express his/her true self, and so on. Instead of influencers, they see themselves as 'psychological midwives', present during the 'birth', possessing useful skills, but there primarily to make sure that a natural process goes smoothly.

- However, this is an exaggeration and misrepresentation of both approaches. For many patients, the 'birth' probably wouldn't happen at all without the therapist's intervention, and s/he undoubtedly influences the patient's behaviour. Conversely, behaviour therapists are at least partly successful because they establish active, cooperative relationships with their patients, who play much more active roles in the therapy than psychotherapists believe.
- All therapists, of whatever persuasion, if they're at all effective, influence their patients. Both approaches comprise a situation in which one human being (the therapist) tries to act in a way that enables another human being to act and feel differently, and this is as true of psychoanalysis as it is of behaviour therapy.

(Based on Wachtel, 1977)

The crucial issue is the *nature* of the therapist's influence, rather than whether or not influence occurs. One ethical issue is whether the influence is exerted in a direction that is in the patient's interest, or in the service of the therapist's needs. Another is whether the patient is fully informed about the kind of influence the therapist wishes to exert, and the kind of ends being sought (the issue of *informed consent*). Therapist *neutrality* is a myth: therapists influence their clients in subtle yet powerful ways. According to Davison and Neale (1994):

> Unlike a technician, a psychiatrist cannot avoid communicating and at times imposing his own values upon his patients. The patient usually has considerable difficulty in finding the way in which he would wish to change his behaviour, but as he talks to the psychiatrist his wants and needs become clearer. In the very process of defining his needs in the presence of a figure who is viewed as wise and authoritarian, the patient is profoundly influenced. He ends up wanting some of the things the psychiatrist thinks he should want.

In the above quotation, we can add 'psychologist' and 'psychotherapist' to 'psychiatrist'.

Freedom and behavioural control

While a behavioural technique such as *systematic desensitisation* (SD) is limited mainly to anxiety reduction, this can at least be seen as enhancing the patient's freedom, since anxiety is one of the greatest restrictions on freedom. By contrast, methods based on *operant conditioning* can be applied to almost any aspect of a person's behaviour. Those who use operant methods (such as the *token economy*/TE) often describe their work rather exclusively in terms of *behavioural control,* subscribing to Skinner's (1971) view of freedom as an illusion (see Chapter 49).

Wachtel (1977) believes that when used in institutional settings (such as with long-term schizophrenic patients in psychiatric hospitals), the TE is so subject to abuse that its use is highly questionable. It may be justifiable if it works, and if there's clearly no alternative way of rescuing a patient from an empty and destructive existence. But as a routine part of how society deals with deviant behaviour, this approach raises very serious ethical questions. One of these relates to the question of *power.* Like the experimental 'subject' relative to the experimenter, the patient is powerless relative to the institutional staff responsible for operating the token economy programme:

> Reinforcement is viewed by many – proponents and opponents alike – as somehow having an inexorable controlling effect upon the person's behaviour and rendering him incapable of choice, reducing him to an automaton or duly wound mechanism ... (Wachtel, 1977)

The alarming feature of the TE is the reinforcing agent's power to deprive un-cooperative patients physically of 'privileges' (see Box 45.7, page 825).

The abuse of patients by therapists

In recent years, there's been considerable criticism of psychotherapy (especially Freudian psychoanalysis), including its ethical shortcomings. Masson (1988) believes that there's an imbalance of power involved in the therapeutic relationship, and individuals who seek therapy need protection from the therapist's constant temptation to abuse, misuse, profit from and bully the client. The therapist has almost absolute emotional power over the patient, and Masson catalogues many examples of patients' emotional, sexual, and financial abuse at their therapists' hands.

Not surprisingly, Masson's attack has stirred up an enormous controversy. Holmes (1992) agrees with the core of Masson's (1992) argument, namely that:

> No therapist, however experienced or distinguished, is above the laws of the unconscious, and all should have access to supervision and work within a framework of proper professional practice.

However, in psychotherapy's defence, Holmes points out that exploitation and abuse are by no means confined to psychotherapy. Lawyers, university teachers, priests, and doctors are also sometimes guilty (the case of Harold Shipman, the serial-killer doctor, being one, albeit rather extreme, example). All these professional groups have ethical standards and codes of practice (often far more stringent than the law of the land), with disciplinary bodies which impose severe punishments (usually expulsion from the profession). We shouldn't condemn an entire profession because of the transgressions of a small minority.

CONCLUSIONS

This chapter has considered the ethics of psychological research, with both human participants and animal subjects, as well as ethical issues arising from the psychologist's role as a professional involved in behaviour change. Discussion of ethical issues has, in various ways, struck at the heart of psychology itself, requiring us to ask what psychology is for. According to Hawks (1981), prevention rather than cure should be a primary aim of psychology, enabling people to cope by themselves, without professional help, thus 'giving psychology away' to people/clients. For Bakan (1967), the significant place in society of the psychologist is more that of the teacher than expert or technician.

CHAPTER SUMMARY

- Psychology's focus of study consists of **sentient** things. This makes every psychological investigation an **ethical situation**, with research determined as much by its effects on those being studied as by what psychologists want to find out.
- The BPS's *Ethical Principles* identifies several issues relating to research with human participants, including **consent/informed consent**, **deception**, **protection of participants**, **debriefing** and **confidentiality**.
- Even if a participant has been fully informed about an experimental procedure, this doesn't guarantee **informed consent**.
- **Debriefing** must take place at the earliest opportunity following the use of **deception**, and an experimenter must ensure that participants leave the experimental situation in at least as positive a frame of mind as when they entered.
- The BPS and APA codes and guidelines are periodically revised in the light of changing social and political contexts. This indicates that there are **no absolute** or **universal ethical truths**.
- Ethical criticisms of Milgram's obedience experiments helped trigger the debate regarding the ethics of research within psychology as a whole.
- The distress that Milgram's participants experienced wasn't an intended or deliberate effect of the experimental procedure. Participants were thoroughly '**dehoaxed**' at the end of the experiment, and Milgram also argued that participants were **free** to obey or disobey.
- While deception is unethical if it prevents participants from giving informed consent, those who've been deceived generally approve of it retrospectively. Deception may sometimes be the best/only way of obtaining valuable insights into human behaviour.
- **Socially sensitive research** (SSR) refers to studies with potential consequences or implications, either for the individual participants or for the groups they represent.
- While ethical codes serve to protect individual participants, underlying assumptions may harm the **social groups** they represent. Formal codes neglect wider issues regarding the ethical acceptability of SSR.
- Psychological research must be **socially meaningful** (the **ethical imperative**). This applies particularly to the work of social psychologists.
- Three possible solutions to the **double obligation dilemma** (DOD) are conducting a **cost–benefit analysis** (C-BA), and obtaining either **presumptive consent** or **prior general consent**.
- While the physical suffering of experimental animals is obvious, mental suffering is less overt. There are several **safeguards** to protect animal subjects, including the BPS *Guidelines for the Use of Animals in Research,* the Animals Act (and the Home Office Inspectors who monitor its implementation), and research into animal suffering.
- Despite these safeguards, the very existence of the Animals Act condones the use of animals. Only 'unnecessary' pain and distress are illegal, and the Medicines Act requires that all new medicines undergo a range of tests on animals before they can be tested on humans.
- The main justifications for animal experimentation are the **pursuit of scientific knowledge** and the **advancement of medicine**. The medical justification argument presupposes that medical benefits have actually resulted from animal experiments. However, scientific opinion is divided about this.
- According to **speciesism**, we're morally obliged to inflict pain on animals in order to reduce potential human suffering. The speciesism argument assumes a greater significance when the non-humans in question are chimpanzees and other **primates**.
- Clinical psychologists and other **agents of change** are likely to neglect professional ethics, because of the twin beliefs that psychology is a **value-free** science (as embodied in the **scientist–practitioner model** of helping) and that therapists should be **value-neutral**/'**non-directive**'.
- However effective a particular technique may be, clinical psychologists still *choose* which techniques to use and what research is worth doing. **Behaviour therapy** and **modification** treat people as helpless organisms, resulting in low self-esteem and passivity.
- **Psychiatric in-patients** are subjected to **subtle coercion** to accept particular treatments, and therapists may exert an even more covert influence over their clients.
- **All** therapists, psychodynamic and behavioural alike, **influence** their clients/patients. The crucial issue is the **nature** of that influence.
- The **token economy** (TE) is often described in terms of **behavioural control**, and within institutions, staff have the **power** to deprive patients of 'privileges'.

There's also a power **imbalance** between therapists and their clients. In both situations, abuse of power may occur.

Links with other topics/chapters

- The change from 'subject' to 'participant' in the earlier and later BPS *Ethical Principles* can partly be attributed to the influence of feminist psychologists, who've also helped to bring about the removal of sexist language from BPS and APA journals as a matter of policy (Chapter 47).
- Part of Milgram's justification of his obedience experiments is his belief in his participants' *free will* (Chapter 49).
- Talking about the aim of 'human betterment' in relation to the 'double obligation dilemma' raises important questions about basic values. It opens out the ethical debate in such a way that values must be addressed and recognised as part of the research process (something advocated very strongly by feminist psychologists (Chapter 47).
- Crucial methodological issues raised by the double obligation dilemma include *experimental realism* and *external validity* or *mundane realism* (Chapters 3, 26 and 27).
- Traditionally, the most deeply informative experiments in social psychology include those examining how participants resolve conflicts, such as Asch's studies of *conformity* (truth versus conformity: Chapter 26), Latané and Darley's *bystander intervention* studies (getting involved in another's troubles versus not getting involved: Chapter 30), and Milgram's own *obedience experiments* (internal conscience versus external authority: Chapter 27).

Free will and determinism

What is free will?

Different meanings of 'free will'

Having a choice

Not being coerced or constrained

Voluntary behaviour

Deliberate control

Why are psychologists interested in the concept of free will?

Free will and psychological abnormality

Free will and moral accountability

Free will as an issue in major psychological theories

Reductionism

What is reductionism?

The mind–body problem

Reductionist theories of the mind–brain relationship

Can you be a materialist without being a reductionist?

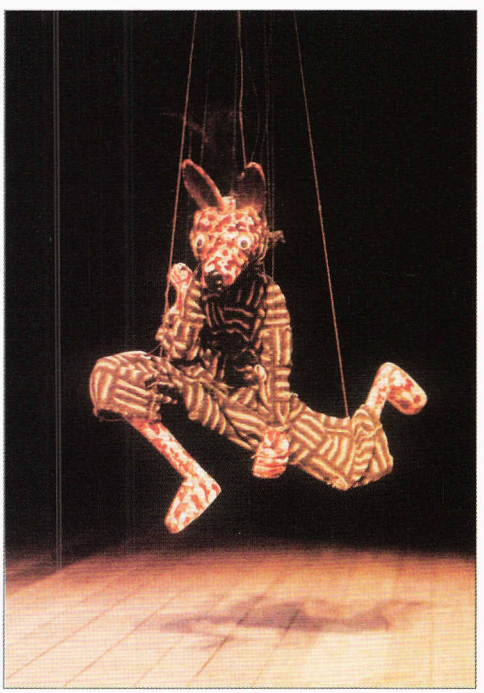
Conclusions

Chapter summary

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49

FREE WILL AND DETERMINISM, AND REDUCTIONISM



INTRODUCTION AND OVERVIEW

Any discussion of psychology's scientific status raises fundamental questions about the nature of the person (see Chapter 3) or, at least, the image of the person that underlies major psychological theories (see Chapter 2), and that is implicit in much of the study of human behaviour. This chapter discusses two of these fundamental questions.

One question, debated by western philosophers for centuries, is whether we choose to act as we do, or whether behaviours are caused by influences beyond our control (*free will versus determinism*). The other, which has a shorter history and is debated by philosophers of science, concerns the validity of attempts to explain complex wholes in terms of their constituent parts (*reductionism*). One example of this is the relationship between the mind (or consciousness) and the brain (the '*mind–body problem*').

FREE WILL AND DETERMINISM

What is free will?

One way of approaching this question is to consider examples of behaviour where 'free will' (however defined) is clearly absent.

CASE STUDY 49.1: Tourette's disorder

Tim is 14 and displays a variety of twitches and tics. His head sometimes jerks and he often blinks and grimaces. Occasionally, he blurts out words, usually vulgarities. He doesn't mean to do it and is embarrassed by it, but he cannot control it. Because of his strange behaviour, most other children avoid him. His isolation and embarrassment are interfering with his social development. Tim suffers from a rare condition called *Tourette's disorder.*

(From Holmes, 1994)

ASK YOURSELF...

- What specific aspects of Tim's disorder are relevant to understanding the concept of 'free will'?
- If you think Tim lacks free will, what led you to this conclusion?
- Think of other behaviours (normal or abnormal) that demonstrate a lack of free will.

Intuition tells us that people have the ability to choose their own courses of action, determine their behaviour and, to this extent, they have *free will.* However, this freedom is exercised only within certain physical, political, sociological, and other environmental constraints. Yet the positivistic, mechanistic nature of scientific psychology (see Chapter 3) implies that behaviour is *determined* by external (or internal) events or stimuli, and that people are passive responders. To this extent, people *aren't free. Determinism* also implies that behaviour occurs in a regular, orderly manner which (in principle) is totally predictable. For Taylor (1963), determinism maintains that:

> In the case of everything that exists, there are antecedent conditions, known or unknown, given which that thing could not be other than it is ... More loosely, it says that everything, including every cause, is the effect of some cause or causes; or that everything is not only determinate but causally determined.

'Everything that exists' includes people and their thoughts and behaviours, so a 'strict determinist' believes that thought and behaviours are no different from (other) 'things' or events in the world. However, this begs the question as to whether thoughts and behaviours are the same *kind of thing* or *event* as, say, chemical reactions in a test tube, or neurons firing in the brain. We don't usually ask if the chemicals 'agreed' to combine in a certain way, or if the neurons 'decided' to fire. Unless we were trying to be witty, we'd be guilty of *anthropomorphism* (attributing human abilities and characteristics to non-humans or things).



This painting by Gustave Doré of the Old Testament story of Lot's wife being turned to stone (*The Rescue of Lot*) illustrates the human capacity for free will

It's only *people* who can agree and make decisions. These abilities and capacities form part of our concept of a person, which, in turn, forms an essential part of 'everyday' or common-sense psychology (see Chapter 1). Agreeing and deciding are precisely the kinds of things we do *with our minds* (they're mental processes or events), and to be able to agree and make decisions, it's necessary to 'have a mind'. So free will implies having a mind. However, having a mind doesn't imply free will: it's possible that decisions and so on are themselves caused (determined), even though they seem to be freely chosen.

ASK YOURSELF...

- Try to explain what someone means when s/he says 'I had no choice but to ...' or 'You leave me no choice ...'.
- Can you interpret this in a way that's consistent with a belief in free will?

Different meanings of 'free will'

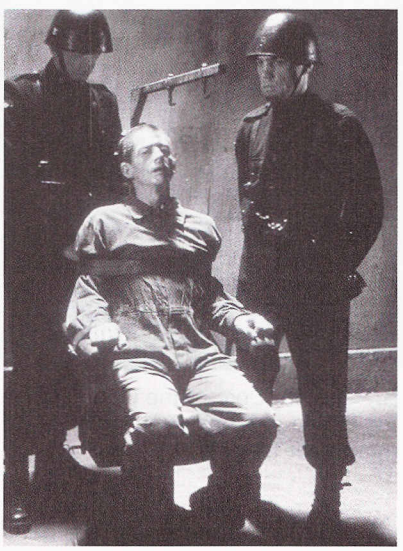
One of the difficulties with the free will versus determinism debate is the ambiguity of the concepts involved.

Having a choice

If we have choice, then we *could* behave differently given the same circumstances. This contrasts sharply with a common definition of determinism, namely that things could only have happened as they did, given everything that happened previously (see above).

Not being coerced or constrained

If someone puts a loaded gun to your head and tells you to do something, your behaviour is clearly not free: you've been forced to act this way. This is usually where the philosophical debate about 'free will' begins, and is related to what James (1890) called *soft determinism* (see pages 890–891).



John Hurt as Winston Smith in the film of George Orwell's *1984*

Voluntary behaviour

If 'involuntary' conveys reflex behaviour (such as the eye-blink response to a puff of air directed at the eye), then 'voluntary' implies 'free' (the behaviour isn't automatic). By definition, most behaviour (human and non-human) *isn't* reflex, nor is it usually the result of coercion. So is most behaviour free?

Box 49.1 Evidence for the distinction between voluntary and involuntary behaviour

- Penfield's (1947) classic experiments involved stimulating the cortex of patients about to undergo brain surgery (see Chapter 4, page 60).
- Even though the cortical area being stimulated was the same as that which is involved when we normally ('voluntarily') move our limbs, patients reported feeling that their arms and legs were being moved passively, quite a different experience from initiating the movement themselves.
- This demonstrates that the subjective experience (*phenomenology*) of the voluntary movement of one's limbs cannot be reduced to the stimulation of the appropriate brain region (otherwise Penfield's patients shouldn't have reported a difference). Doing things voluntarily simply *feels* different from the same things 'just happening'.
- Similarly, Delgado (1969) stimulated a part of the primary motor area in a patient's left hemisphere, causing the patient to form a clenched fist with his right hand. When asked to try to keep his fingers still during the next stimulation, the patient couldn't do it and commented, 'I guess, Doctor, that your electricity is stronger than my will'.
- These examples support the claim that having free will is an undeniable part of our subjective experience of ourselves as people. The sense of self is most acute (and important and real for us) where moral decisions and feelings of responsibility for past actions are involved (Koestler, 1967). See text and Box 49.2 for further discussion of free will and moral responsibility.

One demonstration of people's belief in their free will is *psychological reactance* (Brehm, 1966; Brehm & Brehm, 1981: see Chapter 9). A common response to the feeling that our freedom is being threatened is the attempt to regain or reassert it, which is related to the need to be free from others' controls and restrictions, to determine our own actions and not be dictated to. A good deal of contrary (resistant) behaviour, otherwise known as 'bloody-mindedness' ('Don't tell me what to do!') seems to reflect this process (Carver & Scheier, 1992).

Similar to this need to feel free from others' control is *intrinsic motivation* or *self-determination* (Deci, 1980; Deci & Ryan, 1987). This refers to people's intrinsic interest in things, such that they don't need to be offered extrinsic incentives for doing them. Engaging in such activities is motivated by the desire for competence and self-determination.

So what happens if someone is offered an extrinsic reward for doing something which is already interesting and enjoyable in itself? Lepper *et al.* (1973) found that the activity loses its intrinsic appeal, and motivation is

reduced (the *paradox of reward*). This has implications for accounts of moral development based on learning theory principles, especially operant conditioning (see Chapters 11 and 35).

ASK YOURSELF...

- How could you account for the 'paradox of reward' in terms of attributional principles, specifically, internal and external causes? (See Chapter 23.)

Deliberate control

Norman & Shallice (1986) define divided attention as an upper limit to the amount of processing that can be performed on incoming information at any one time. They propose three levels of functioning, namely *fully automatic processing, partially automatic processing,* and *deliberate control* (see Chapter 13). Deliberate control corresponds to free will.

Driving a car is a sensory–motor skill, performed by experienced drivers more or less automatically. It doesn't require deliberate, conscious control, unless some unexpected event disrupts the performance (such as putting your foot on the brake when there's an obstacle ahead: this is a 'rule of the game'). However, on an icy road this can be risky, since the steering wheel has a different 'feel' and the whole driving strategy must be changed. After doing it several times, this too may become a semi-automatic routine:

> But let a little dog amble across the icy road in front of the driver, and he will have to make a 'top-level decision' whether to slam down the brake, risking the safety of his passengers, or run over the dog. And if, instead of a dog, the jaywalker is a child, he will probably resort to the brake, whatever the outcome. It is at this level, when the pros and cons are equally balanced, that the subjective experience of freedom and moral responsibility arises ... (Koestler, 1967)

As we move downwards from conscious control, the subjective experience of freedom diminishes. According to Koestler:

> Habit is the enemy of freedom ... Machines cannot become like men, but men can become like machines.

Koestler also maintains that the second enemy of freedom is very powerful (especially negative) emotion:

> When [emotions] are aroused, the control of decisions is taken over by those primitive levels of the hierarchy which the Victorians called 'the Beast in us' and which are in fact correlated to phylogenetically older structures in the nervous system.

The arousal of these structures results in 'diminished responsibility' and 'I couldn't help it' (Koestler, 1967).

ASK YOURSELF...

- In Koestler's quote above, (a) what does 'phylogenetically older structures' mean? and (b) what are the major 'primitive levels of the hierarchy' correlated with these structures? (See Chapter 4, page 67.)



Robert Louis Stephenson's *The Strange Case of Dr Jekyll and Mr Hyde* illustrates how the arousal of powerful, primitive emotions can lead to claims of 'diminished responsibility'

Why are psychologists interested in the concept of free will?

As noted in the *Introduction and overview,* the philosophical debate about free will and determinism is centuries old. It can be traced back at least to the French philosopher Descartes (1596–1650), whose ideas had a great influence on both science in general and psychology in particular. For much of its history as a separate, scientific discipline, psychology has operated as if there were no difference between natural, physical phenomena and human thought and behaviour (see Chapter 3).

During the period 1913–1956, psychology (at least in the USA) was dominated by behaviourism, Skinner being particularly influential. Skinner's beliefs about the influence of mental phenomena on behaviour, and those concerning free will, are discussed below (see pages 892–893).

ASK YOURSELF...

- Try to identify some (other) ways in which the issue of free will is relevant to psychological theory and practice. For example, how does the notion of free will relate to criteria for defining and diagnosing mental disorders? (See Chapter 43.)

Free will and psychological abnormality

Definitions of abnormality, and the diagnosis and treatment of mental disorders, often involve implicit or explicit judgements about free will and determinism. In a general sense, mental disorders can be seen as the partial

or complete breakdown of the control people normally have over their thoughts, emotions, and behaviours. For example, *compulsive* behaviour is, by definition, behaviour which a person cannot help but do: s/he is 'compelled' to do it. People are *attacked* by panic, *obsessed* by thoughts of germs, or become the *victims* of thoughts which are inserted into their mind from outside and are under external influence (see Chapter 44). In all these examples, things are happening to, or being done to, the individual (instead of the individual doing them), both from their own perspective and that of a psychologist or psychiatrist.

Being judged to have lost control (possession of which is usually thought of as a major feature of normality), either temporarily or permanently, is a legally acceptable defence in cases of criminal offences.

Box 49.2 Forensic psychiatry, diminished responsibility and the law

- *Forensic psychiatry* deals with assessment and treatment of mentally disturbed offenders (see Chapter 46). The Mental Health Act 1983 has several clauses providing for the compulsory detention of prisoners (either while awaiting trial or as part of their sentences) in hospital. Psychiatrists, as expert witnesses, can play important roles in advising the Court about:

  (a) fitness to plead
  (b) mental state at the time of the offence
  (c) diminished responsibility.

- The defence of *diminished responsibility* (for murder) was introduced in England and Wales in the 1957 Homicide Act, largely replacing the plea of 'not guilty by reason of insanity', which was based on the 'McNaughton Rules' of 1843.

  If accepted, there's no trial and a sentence of manslaughter is passed. If not accepted, a trial is held and the jury must decide whether the accused (at the time the crime was committed) was suffering from an abnormality of mind, and if so, whether it was such as to impair substantially his/her responsibility.

- Peter Sutcliffe, the 'Yorkshire Ripper', was found guilty of the murder of 13 women and the attempted murder of seven others, despite his defence that he heard God's voice telling him to 'get rid' of prostitutes. In finding him guilty of murder, the jury didn't necessarily reject the defence's argument that he was suffering from paranoid schizophrenia, only that it didn't constitute a mental abnormality of sufficient degree to impair substantially responsibility for his acts. Sutcliffe was sentenced to 20 concurrent terms of life imprisonment, which he served initially in an ordinary prison before being sent to Broadmoor Special Hospital.

(Based on Gelder *et al.*, 1989; Prins, 1995)



Peter Sutcliffe, the 'Yorkshire Ripper'

Free will and moral accountability

Underlying the whole question of legal (and moral) responsibility is the presupposition that people are, at least some of the time, able to control their behaviours and choose between different courses of action. How else could we ever be held responsible for any of our actions? In most everyday situations and interactions, we attribute responsibility, both to ourselves and others, unless we have reason to doubt it. According to Flanagan (1984):

> It seems silly to have any expectations about how people ought to act, if everything we do is the result of some inexorable causal chain which began millennia ago. 'Ought', after all, seems to imply 'can', therefore, by employing a moral vocabulary filled with words like 'ought' and 'should', we assume that humans are capable of rising above the causal pressures presented by the material world, and, in assuming this we appear to be operating with some conception of freedom, some notion of free will.

Free will as an issue in major psychological theories

Most major theorists in psychology have addressed the issue of free will and determinism, including James, Freud, Skinner and Rogers.

James and soft determinism

As we saw in Chapter 1, James pioneered psychology as a separate, scientific discipline. In *The Principles of Psychology* (1890), he devoted a whole chapter to the 'will', which he related to attention:

> The most essential achievement of the will ... when it is most 'voluntary' is to attend to a different object and hold it fast before the mind ... Effort of attention is thus the essential phenomenon of will.

For James, there was a conflict. Belief in determinism seemed to fit best with the scientific view of the world, while belief in free will seemed to be required by our social, moral, political, and legal practices, as well as by our personal, subjective experience (see above). His solution to this conflict was two-fold.

1. He distinguished between the scientific and non-scientific worlds. Psychology as a science could progress only by assuming determinism, but this doesn't mean that belief in free will must be abandoned in other contexts. So, scientific explanation isn't the only useful kind of explanation.
2. He drew a further distinction between *soft* and *hard* determinism. According to *soft determinism,* the question of free will depends on the type(s) of cause(s) our behaviour has, *not* whether it's caused or not caused (the opposite of 'not caused' is 'random', not 'free'). If our actions have, as their immediate (proximate) cause, processing by a system such as *conscious mental life* (CML, which includes consciousness, purposefulness, personality and personal continuity), then they count as free, rational, voluntary, purposive actions. According to *hard determinism,* CML is itself caused, so that the immediate causes are only part of the total causal chain which results in the behaviour we're trying to explain. Therefore, as long as our behaviour is caused at all, there's no sense in which we can be described as acting freely.

Freud and psychic determinism

Although in most respects Freud's and Skinner's ideas about human behaviour are diametrically opposed, they shared the fundamental belief that free will is an *illusion.* However, in keeping with their theories as a whole, their reasons are radically different.

ASK YOURSELF...

- Based on what you already know about Freud's psychoanalytic theory, try to identify those parts that are most relevant to his rejection of free will.

According to Strachey (1962):

> Behind all of Freud's work ... we should posit his belief in the universal validity of the law of determinism ... Freud extended the belief (derived from physical phenomena) uncompromisingly to the field of mental phenomena.

Similarly, Sulloway (1979) maintains that all of Freud's work in science (and Freud saw himself very much as a scientist) was characterised by an abiding faith in the notion that all vital phenomena, including psychical (psychological) ones, are rigidly and lawfully determined by the principle of cause and effect. One major example of this was the extreme importance he attached to the technique of *free association.*

Box 49.3 How 'free' is Freud's 'free association'?

- 'Free association' is a misleading translation of the German *'freier Einfall'*, which conveys much more accurately the intended impression of an uncontrollable 'intrusion' (*Einfall*) by preconscious ideas into conscious thinking. In turn, this preconscious material reflects unconscious ideas, wishes, and memories (what Freud was really interested in), since here lie the principal causes of neurotic problems.
- It's a great irony that 'free' association should refer to a technique used in psychoanalysis meant to reveal the *unconscious* causes of behaviour. It's because the causes of our thoughts, actions, and supposed choices are unconscious (mostly *actively repressed*), that we *think* we're free.
- Freud's application of this general philosophical belief in causation to mental phenomena is called *psychic determinism* (see Chapter 42, page 749).

(Based on Sulloway, 1979)

For Freud, part of what 'psychic determinism' conveyed was that in the universe of the mind, there are no 'accidents'. No matter how apparently random or irrational behaviour may be (such as '*parapraxes*' or 'Freudian slips'), unconscious causes can always account for them, and this also applies to hysterical symptoms and dreams. As Gay (1988) states, 'Freud's theory of the mind is ... strictly and frankly deterministic'. However, the following points should be borne in mind:

- Freud accepted that true accidents, in the sense of forces beyond the victim's control (e.g. being struck by lightning), can and do occur, and aren't unconsciously caused by the victim
- one of the aims of psychoanalysis is to 'give the patient's ego *freedom* to decide one way or another' (Freud, quoted in Gay, 1988), so therapy rests on the belief that people *can* change. However, Freud saw the extent of possible change as being very limited (see Critical Discussion 45.2, page 818)
- one aspect of psychic determinism is *overdetermination;* that is, much of our behaviour has multiple causes, both conscious and unconscious. So although our conscious choices, decisions, and intentions may genuinely influence behaviour, they never tell the whole story
- despite never having predicted in advance what choice or decision a patient would make, Freud maintained that these aren't arbitrary, and can be understood as revealing personality characteristics (Rycroft, 1966). What Freud often did was to explain his patients' choices, neurotic symptoms, and so on not in terms of causes (the *scientific* argument), but by trying to make sense of them and give them meaning

(the *semantic* argument). Indeed, the latter is supported by the title of, arguably, his greatest book, *The Interpretation of Dreams* (1900) (as opposed to *The 'Cause' of Dreams*).

Skinner and the illusion of free will

As we noted above, Skinner, like Freud, sees free will as an illusion. However, while Freud focused on 'the mind', especially unconscious thoughts, wishes, and memories, Skinner's *radical behaviourism* eliminates all reference to mental or private states as part of the explanation of behaviour (including theories like Freud's!).

Although Skinner doesn't deny that pain and other internal states exist, they have no 'causal teeth' and hence no part to play in scientific explanations of (human) behaviour (Garrett, 1996). Free will (and other 'explanatory fictions') cannot be defined or measured objectively, nor are they needed for successful prediction and control of behaviour (for Skinner, the primary aims of a *science of behaviour*). It's only because the causes of human behaviour are often hidden from us in the environment, that the myth or illusion of free will survives.

ASK YOURSELF...

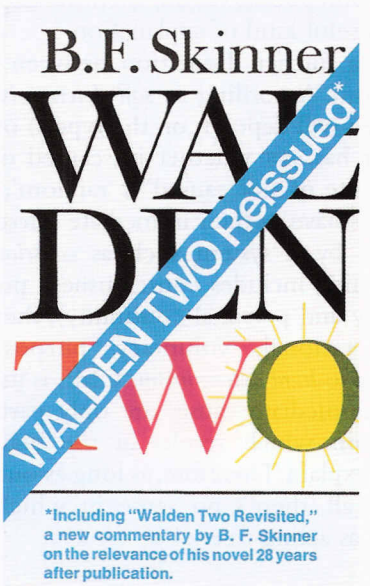
- Given what you know about Skinner's theory of operant conditioning and his 'analysis of behaviour', try to identify the causes of human behaviour that he believes are often hidden from us in the environment. (See Chapters 2 and 11.)

Skinner argues that when what we do is dictated by force or punishment, or by their threat (negative reinforcement), it's obvious to everyone that we're not acting freely. For example, when the possibility of prison stops us committing crimes, there's clearly no choice involved, because we know what the environmental causes of our behaviour are. Similarly, it may sometimes be very obvious which positive reinforcers are shaping behaviour (a bonus for working overtime, for example).

However, most of the time we're unaware of environmental causes, and it looks (and feels) as if we're behaving freely. Yet all this means is that we're free of punishments or negative reinforcement, and behaviour is still determined by the pursuit of things that have been positively reinforced in the past. When we perceive others as behaving freely, we're simply unaware of their reinforcement histories (Fancher, 1996).

Box 49.4 The freedom myth and the rejection of punishment

- In *Beyond Freedom and Dignity,* Skinner (1971) argued that the notion of 'autonomous man', upon which so many of western society's assumptions are based, is false and has many harmful consequences.
- In particular, the assumption that people are free requires that they're constantly exposed to punishment and its threat as a negative reinforcer (Fancher, 1996).
- In his 1948 novel *Walden Two,* Skinner (1948b) describes a utopian society where only mutual reinforcement is used – never punishment or negative reinforcement.



ASK YOURSELF...

- What *ethical* issues are raised by Skinner's advocacy of a utopian society like *Walden Two?*
- In what ways does this Utopia reflect Skinner's beliefs about the aims of a scientific psychology?

Skinner's views on bettering society (through strict behavioural control or engineering) caused an enormous backlash from critical audiences and the general public. This is reflected in his appearance on the cover of *Time* magazine in September 1971. Rogers claimed that Skinner's utopian vision was indistinguishable from Orwell's *Nineteen Eighty-Four,* a nightmarish *dystopia,* which warns against a punitive society where people are treated as automatons by those in power (O'Donohue & Ferguson, 2001).

Clearly, Skinner's belief that free will is an illusion conflicts with the need to attribute people with free will if we're to hold them (and ourselves) morally (and legally) responsible for their behaviour. Skinner (1971) himself acknowledges that freedom and dignity are:

> ... essential to practices in which a person is held responsible for his conduct and given credit for his achievements.



Afghan men in Kabul at a cockfighting match, very popular with gamblers in this war-torn country. Where activities like these are such a part of the culture, are individuals responsible for their behaviour?

However, Skinner equates 'good' and 'bad' with 'beneficial to others' (what's rewarded) and 'harmful to others' (what's punished) respectively, thus removing morality from human behaviour. For Skinner, 'oughts' aren't 'moral imperatives': they reflect *practical,* rather than moral, guidelines and rules. (Morea, 1990).

According to Garrett (1996), if we're rational, thinking creatures, capable of assessing ethical rules and principles, and evaluating the goodness of our lives, then we have all the freedom needed reasonably to prefer democratic to non- (or anti-) democratic forms of government (as expressed in *Walden Two* and *Beyond Freedom and Dignity*).

A further consequence of Skinner's rejection of the notion of 'autonomous man' is what Ringen (1996) calls the *behaviour therapist's dilemma.*

Box 49.5 The behaviour therapist's dilemma

- There's a deep tension between two features of modern clinical psychology.
- On the one hand, Skinner (1971) argues that scientific considerations support *radical behaviourism* as the most appropriate framework for understanding and facilitating the development of effective behaviour therapy (including methods based on both classical and operant conditioning).
- On the other hand, an increasingly significant ethical and legal constraint on therapeutic practice, the doctrine of *informed consent*, obliges behaviour therapists (and other practitioners in the helping professions, including psychiatry) to acknowledge the autonomy of those who come to them for help.
- The *behaviour therapist's dilemma* describes the tension between these two aspects of modern clinical psychology: either radical behaviourism is false or human beings never act autonomously. This involves having to choose between alternatives that many contemporary behaviour therapists would find difficult to defend.

(From Ringen, 1996)

Rogers, freedom and the fully functioning person

As we saw in Chapter 2, Rogers was perhaps the most influential *humanistic, phenomenological* psychologist. As such, he stressed the process of self-actualisation and the necessity of adopting the other person's perspective if we're to understand that person, and in particular, his/her self-concept (see Chapter 42).

Understanding the self-concept is also central to Rogers' client-centred therapy (see Chapter 45). His experience as a therapist convinced him that real change does occur in therapy: people choose to see themselves and their life situations differently. Therapy and life are about free human beings struggling to become more free. Personal experience is important, but it doesn't imprison us. How we react to our experience is something we ourselves choose and decide (Morea, 1990).

ASK YOURSELF...

- According to Rogers, in what ways are individuals prevented from recognising their true feelings and behaviour?
- In what respect is Rogers' view of human beings a more optimistic one than, say, Freud's?

Rogers' deep and lasting trust in human nature didn't, however, blind him to the reality of evil behaviour:

> In my experience, every person has the capacity for evil behaviour. I, and others, have had murderous and cruel impulses ... feelings of anger and rage, desires to impose our wills on others ... Whether I ... will translate these impulses into behaviour depends ... on two elements: social conditioning and voluntary choice ... (Rogers, 1982, cited in Thorne, 1992)

By making the distinction between 'human nature' and behaviour, Rogers retains his optimistic view of human beings. However, this didn't exclude altogether a deterministic element in his later writings. In *Freedom to Learn for the eighties* (1983), he states that it's becoming clear from science that human beings are complex machines and not free, and determinism 'is the foundation stone of present-day science'. So how can this be reconciled with self-actualisation, psychological growth and the freedom to choose?

One proposed solution is in the form of a version of soft determinism. Unlike neurotic and incongruent people whose defensiveness forces them to act in ways they'd prefer not to, the healthy, fully functioning person:

> ... not only experiences, but utilises, the most absolute freedom when he spontaneously, freely and voluntarily chooses and wills that which is absolutely determined.

He seemed to mean that at the same time as we *choose* our behaviour, it's also being *determined* by all the relevant conditions that exist. The open, responsive (fully functioning) person is fully aware of all that's going on inside, and has an accurate grasp of existing external factors. This individual is free, but s/he will take a particular course of action: in the presence of all available stimuli there are certain behaviours that are most productive from both subjective and objective points of view. In this sense, there's no contradiction between free will and determinism: they coincide (Nye, 2000).

Sociobiology: extreme biological determinism

Rose *et al.*'s *Not In Our Genes* (1984) is a critique of *biological determinism* in general. Here, we concentrate on those aspects that are most relevant to the issue of freedom and determinism.

The central claim of *sociobiology* is that all aspects of human culture and behaviour, like that of all animals, are coded in the genes and have been moulded by natural selection. Sociobiology is a reductionist, biological determinist explanation of human existence. Its adherents claim that:

- the details of present and past social arrangements are the inevitable manifestations of the specific action of genes
- the particular genes that lie at the basis of human society have been selected in evolution; therefore, the traits they determine result in higher reproductive fitness of the individuals that carry them (that is, they're more likely to survive to have offspring that will have genes for those traits: see Chapter 2).

If one accepts biological determinism, nothing needs to be changed:

> ... for what falls in the realm of necessity falls outside the realm of justice. The issue of justice arises only when there is choice ... To the extent that we are free to make ethical decisions that can be translated into practice, biology is irrelevant; to the extent that we are bound by our biology, ethical judgements are irrelevant ...

Biological determinism has such wide appeal because it removes guilt and responsibility: it's 'our biology' that's to blame, *not people,* either individually or collectively. But, according to Rose *et al.*, this involves a *false dichotomy* between biological and cultural/social, just as 'nature/nurture' (see Chapter 50) and 'mind/ brain' (see below) are false dichotomies. 'Free will/determinism' is another. What characterises human development and actions is that they're the product of an immense array of interacting, intersecting causes. Our actions aren't random or independent with respect to the totality of those causes as an interacting system, for we're material beings in a causal world:

> ... But to the extent that they are free, our actions are independent of any one or even a small subset of those multiple paths of causation: that is the precise meaning of freedom in a causal world. When ... our actions are predominantly constrained by a single cause, like ... the prisoner in his cell ... we are no longer free. For biological determinists we are unfree because our lives are strongly constrained by a relatively small number of internal causes, the genes for specific behaviours or for pre-disposition to those behaviours But this misses the essence of the difference between human biology and that of other organisms ... Our biology has made us into creatures who are constantly re-creating our own psychic and material environments, and whose individual lives are the outcomes of an extraordinary multiplicity of intersecting causal pathways. Thus, it is our biology that makes us free. (Rose *et al.*, 1984)

CRITICAL DISCUSSION 49.1 Freedom as an evolutionary reality

- Belief in evolutionary forces and genetic influences may lead sociobiologists largely to deny free will, but it can also lead to the opposite conclusion. According to Dennett (2003):

  Free will is an evolved creation of human activity and beliefs, and it is just as real as such other creations as music and money ... Recognising our uniqueness as reflective, communicating animals does not require any 'human exceptionalism' that must shake a defiant fist at Darwin ... We may thus concede that material forces ultimately govern behaviour, and yet at the same time reject the notion that people are always and everywhere motivated by material self-interest.

- Dennett believes that educated people are trapped in a strange kind of double-think. On the one hand, they believe that natural science implies determinism, which proves they have no control over their lives. But on the other hand, in their actual daily lives, they mostly assume they *do* have this control. But the conflict can create deep, underlying anxiety, confusion, guilt and a sense of futility. (This is basically the same dilemma faced by James: see text above.)
- Consistent with James's position, Dennett argues that determinism *isn't* fatalism, which teaches that human effort makes no difference to what happens. Fatalism is another term for *hard* determinism, which reflects the view of the mind as mere *epiphenomenona* (see text below). But fatalism is clearly false, based on an oversimplified, largely outdated scientific view of the world. All the sciences, including physics, now find complexity and variety of patterns everywhere. The more complex creatures become, the wider the range of activities open

to them. And with this increase goes a steadily increasing degree of freedom. According to Dennett:

The freedom of the bird to fly wherever it wants is definitely a kind of freedom, a distinct improvement on the freedom of the jellyfish to float wherever it floats, but a poor cousin of our human freedom ... Human freedom, in part a product of the revolution begat of language and culture, is about as different from bird freedom as language is different from birdsong. But to understand the richer phenomenon, one must first understand its more modest components and predecessors.

- This evolutionary view of human freedom is similar to that proposed by Rose (1997). Both make the central point that our conscious inner life isn't some sort of irrelevant supernatural intrusion on the working of our physical bodies (a 'ghost in the machine'), but a crucial feature of their design. We've evolved as beings that can feel and think in a way that makes us able to direct our actions. We operate as whole people, our minds and bodies are aspects of us, not separate items. They don't need to compete for the driving seat (Midgley, 2003).

REDUCTIONISM

What is reductionism?

Luria (1987) traces the origins of reductionism to the mid-nineteenth-century view within biology that an organism is a complex of organs, and the organs are complexes of cells. To explain the basic laws of the living organism, we have to study as carefully as possible the features of separate cells.

From its biological origins, reductionism was extended to science in general. For example, the properties of a protein molecule could be uniquely determined or predicted in terms of properties of the electrons or protons making up its atoms. Consistent with this view is Garnham's (1991) definition of reductionism as:

> ... the idea that psychological explanations can be replaced by explanations in terms of brain functioning or even in terms of physics and chemistry.

Although reductionism's ultimate aim (according to its supporters) is to account for all phenomena in terms of microphysics, *any* attempt to explain something in terms of its components or constituent parts may be thought of as reductionist. A useful definition, which is consistent with this broader view, is that of Rose *et al.* (1984), for whom reductionism is:

> ... the name given to a set of general methods and modes of explanation both of the world of physical objects and of human societies. Broadly, reductionists try to explain the properties of complex wholes – molecules, say, or societies – in terms of the units of which those molecules or societies are composed.

Rose (1997) identifies four major types of reductionism (or different meanings of the term).

Box 49.6 Different meanings of reductionism

- **Reductionism as methodology:** This refers to the attempt to isolate variables in the laboratory in order to simplify the living world's enormous complexity, flux, and multitude of interacting processes. This is the basis of the experiment, which reflects natural science's attempt to identify *cause-and-effect* relationships (see Chapter 3).
- **Theory reduction:** This refers to science's aim to capture as much of the world in as few laws or principles as possible. It's related to philosophical reductionism.

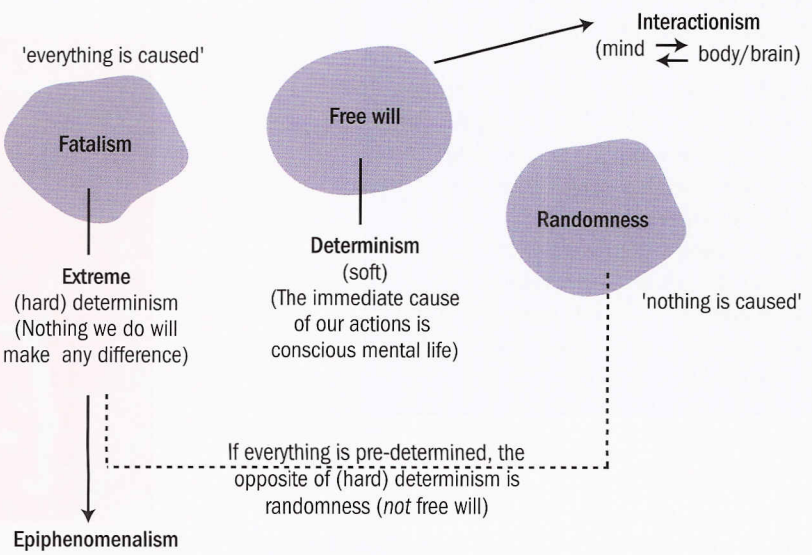


Figure 49.1 The relationship between free will and determinism, showing the link with theories of the mind–brain relationship

- **Philosophical reductionism:** This refers to the belief that because science is unitary, and because physics is the most fundamental of the sciences, ultimately all currently separate disciplines (including psychology) will be 'reduced' to physics (see the quotes from Garnham, 1991, above, and Crick, 1994, page 897).
- **Reductionism as ideology:** This refers to the very marked tendency in recent years to identify genes responsible for a whole range of complex human behaviours, including stress, anxiety, depression, personality, homosexuality, intelligence, alcoholism, criminality and violence.

(Based on Rose, 1997)

Rose calls the claim that there's a direct causal link between genes and behaviour *neurogenetic determinism*. It involves a sequence of (false) assumptions and arguments, one of which is the dichotomy between genetic and environmental causes (or nature and nurture: see Chapter 50).

ASK YOURSELF...

- There are many examples of psychological theories and concepts that fit either or both of Garnham's and Rose *et al.*'s definitions. These can be found in all areas of psychology, but below are a few of the more 'obvious' examples. For each one, try to explain (a) why the theory or concept is reductionist, and (b) what the strengths and/or weaknesses of such an approach are.

(i) According to *structuralism* (e.g. Wundt), perception is simply a series of sensations (see Chapter 3).
(ii) According to Watson's *peripheralism*, thought consists of tiny movements of the vocal chords (see Chapter 18).
(iii) *Intelligence* is a person's performance on a standardised intelligence test (his/her IQ score: see Chapter 41).
(iv) *Psychological sex differences* are caused by biological factors (such as hormones: see Chapter 36).
(v) According to Freud, *personality development* involves progress through a series of *psychosexual stages* (see Chapter 35).
(vi) *Schizophrenia* is caused by an excess of the neurotransmitter *dopamine* (see Chapter 44).
(vii) According to Adorno *et al.*, anti-semitism (and other forms of racism) are symptomatic of the *authoritarian personality* (see Chapter 25).

The mind–body problem

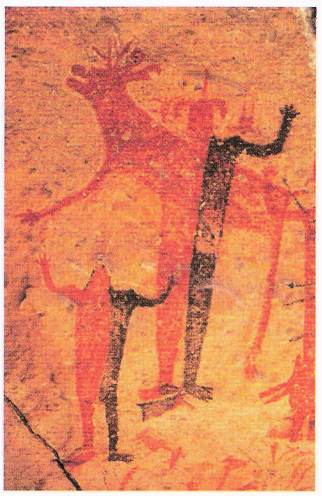
Perhaps the oldest and most frequently debated example of reductionism is the *mind–body problem* (or the *problem of mind and brain*). Originally a philosophical issue, it continues to be discussed, often passionately, by neurophysiologists, biologists, neuropsychologists, and psychologists in general.

It's generally agreed that the mind (or consciousness) is a property of human beings (as is walking upright on two legs), and that without the human brain there'd be no consciousness. But a 'problem' remains.

Box 49.7 The problem of the mind–brain relationship

- How can two 'things' be related when one of them is physical (the brain has size, weight, shape, density, and exists in space and time) and the other apparently lacks all these characteristics?
- How can something non-physical/non-material (the mind) influence or produce changes in something physical (the brain/body)?
- The 'classic' example given by philosophers to illustrate the problem is the act of deciding to lift one's arm. (This example also illustrates the exercise of [free] will: see text above.) From a strictly scientific perspective, this kind of causation should be impossible. Science (including psychology and neurophysiology) has traditionally rejected any brand of *philosophical dualism:* the belief in the existence of two essentially different kinds of 'substance', the physical body and the non-physical mind (see Box 49.8, page 897).

From an *evolutionary* perspective, could consciousness have equipped human beings with survival value unless it had causal properties (Gregory, 1981); that is, unless it could actually bring about changes in behaviour? Our subjective experiences tell us that our minds do affect behaviour, and that consciousness does have causal properties (just try lifting your arm). However, many philosophers and scientists from various disciplines haven't always shared the lay person's common-sense understanding.



Self-awareness/consciousness and the ability to understand and predict others' behaviour may be the characteristics of human beings which make them unique as a species

While there are many theories of the mind–brain relationship, most aren't strictly relevant to the debate about reductionism. Box 49.8 and Figure 49.2 summarise most of the major theories, but emphasis is given to reductionist approaches, especially as they impinge on psychological theories.

Box 49.8 Some major theories of the mind–brain relationship

- Theories fall into two main categories: *dualism* (which distinguishes between mind and brain), and *monism* (which claims that only mind or matter are real).
- According to Descartes' seventeenth-century dualist theory (which first introduced the mind–body problem into philosophy), the mind can influence the brain, but not vice versa. While *epiphenomenology* sees the mind as a kind of by-product of the brain (the mind has no influence on the brain), *interactionism* sees the influence as two-way.
- *Psychophysical parallelists* are dualists who believe that there's no mind–brain interaction at all: mental and neural events are merely perfectly *synchronised or correlated*.
- According to *mentalism/idealism,* only mental phenomena are real. *Phenomenological* theories, such as that of Rogers, and *constructionist* explanations of behaviour, have a mentalist 'flavour'.
- Most monist theories take one or other form of *materialism*.
- The *peripheralist* version of materialism is illustrated by Skinner's *radical behaviourism* (see Chapter 2). During the 1930s, Skinner denied the existence of mental phenomena (as had Watson, the founder of behaviourism). However, from 1945 he began to adopt a less extreme view, recognising their existence, but defining them as *covert/internal actions,* subject to the same laws of conditioning as overt behavioural events. This is a form of reductionism.
- *Centralist materialism* (or *mind–brain identity theory*) identifies mental processes with purely physical processes in the central nervous system. While it's logically possible that there might be separate, mental, non-physical phenomena, it just turns out, as a matter of fact, that mental states are identical with physical states of the brain. We are, simply, very complicated *physico-chemical mechanisms.*
- *Eliminative materialism* represents an extreme reductionist form of (centralist) materialism (see text below).

(Based on Flanagan, 1984; Gross, 2003b; Teichman, 1988)

ASK YOURSELF...

- Using your knowledge of *biopsychology,* try to relate the examples below to the theories outlined in Box 49.8 and Figure 49.2.
- Specifically, do these examples involve interactions between mind and brain, and, if so, in what direction is the influence taking place?
  - (a) the effects of psychoactive drugs (see Chapters 8 and 45)
  - (b) electrical stimulation of the brain (see Chapter 4)
  - (c) Sperry's study of split-brain patients (see Chapter 4)
  - (d) stress (see Chapter 12)
  - (e) placebo effects (see Chapter 45)

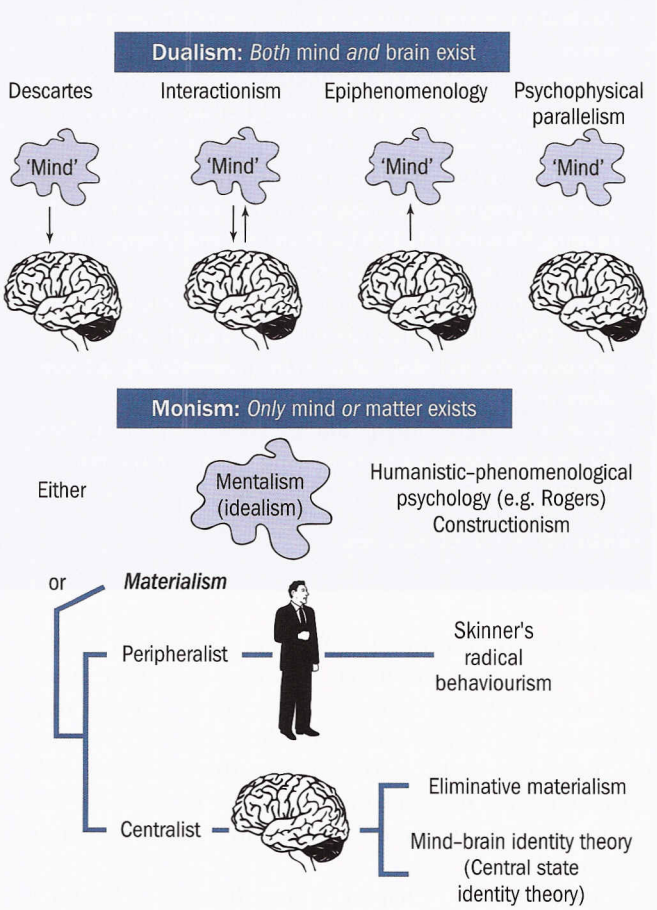


Figure 49.2 An outline of the major theories of the mind–brain relationship

Reductionist theories of the mind–brain relationship

As Box 49.8 shows, *eliminative materialism* is an extreme form of reductionist materialism. What makes it reductionist is the attempt to *replace* a psychological account of behaviour with an account in terms of neurophysiology. An example of this approach is Crick's (1994) *The Astonishing Hypothesis: The Scientific Search for the Soul.* According to Crick:

> You, your joys and your sorrows, your memories and your ambitions, your sense of personality and free will, are in fact no

more than the behaviour of a vast assembly of nerve cells and their associated molecules.

But is this a valid equation to make? According to Smith (1994), the mind and brain problem is radically different from other cases of *contingent identity* (identical as a matter of fact) with which it's usually compared, such as 'a gene is a section of the DNA molecule'. What's different is reductionism, and the related issue of exactly what's meant by *identity.*

Box 49.9 Different meanings of 'identity' relevant to the mind–brain relationship

- While it's generally agreed that we cannot have a mind without a brain, mind states and brain states *aren't* systematically correlated, and the neurophysiological and neurological evidence points towards *token identity.*
- For example, we cannot just assume that the same neurophysiological mechanisms will be used by two different people both engaged in the 'same' activity of reading (Broadbent, 1981). There are many ways that 'the brain' can perform the same task.
- But it's precisely this kind of systematic correlation that mind–brain identity has been taken to imply, whereby whenever a mind state of a certain type occurs, a brain state of a certain type occurs (*type identity*).
- Token identity means that there must always be a place for an autonomous psychological account of human thought and action.

(Based on Harré *et al.*, 1985)

According to Penrose (1990), there's a built-in *indeterminacy* in the way individual neurons and their synaptic connections work (their responses are inherently unpredictable). Yet, despite this unpredictability at the level of the individual units or components, the system as a whole is predictable. The 'nervous system' (or subsystems within it) doesn't operate randomly, but in a highly organised, structured way.

Consciousness (Chapter 7), intelligence (Chapter 41), and memory (Chapter 17) are properties of the brain as a system, *not* properties of the individual units, and they couldn't possibly be predicted from analysing the units. Instead, they 'emerge' from interactions between the units that compose the system (and so are called *emergent properties*). The whole is greater than the sum of its parts (Rose, 1997: see Chapter 15).

Can you be a materialist without being a reductionist?

According to Rose (1992):

The mind is never replaced by the brain. Instead we have two distinct and legitimate languages, each describing the same unitary phenomena of the material world.

Rose speaks as a materialist and an *anti-reductionist,* who believes that we should learn how to translate between mind language and brain language (although this may be impossibly difficult: see Box 49.6). While most materialists are also reductionists, and vice versa, this isn't necessarily so. Freud, for example, was a materialist who believed that no single scientific vocabulary (such as anatomy) could adequately describe (let alone explain) all facets of the material world. He believed in the *autonomy of psychological explanation.*

The fact that there are different 'languages' for describing minds and brains (or different levels of description or universes of discourse) relates to the question of the relevance of knowing, say, what's going on inside our brains when we think or are aware. For Eiser (1994):

The firing of neurons stands to thought in the same relation as my walking across the room (etc.) stands to my getting some coffee. It is absolutely essential in a causal or physical sense, and absolutely superfluous ... to the logic of the higher-order description. In short, I can accept that it happens, and then happily ignore it.

This explains how it's possible to be simultaneously a materialist (the brain is necessarily implicated in everything we do and the mind doesn't represent a different kind of reality) and an anti-reductionist (we can describe and explain our thinking without having to 'bring my brain into it'). Two separate levels of description are involved.

CONCLUSIONS

Given psychology's intellectual and historical roots in philosophy and natural science, it's hardly surprising that psychological theories have contributed to the debate about free will versus determinism, and reductionism. The possession of free will is a fundamental aspect of our common-sense concept of a person. Therefore, any theory calling itself psychological must have something to say about this issue.

Equally, belief (or not) in the independence of psychological from neurophysiological explanations of behaviour is crucial to the survival of psychology itself as a separate discipline. According to Hegarty (2000), *psychoneuroimmunology* (which we discussed in Chapter 12 in relation to stress) offers a:

... middle ground for mind–body monists and dualists to meet upon. Scientific research has given us insight into the complex realm of psychophysiology – the interface ... between body and mind and in which the emotions figure large ...

CHAPTER SUMMARY

- Our intuitive belief in **free will** conflicts with the scientific belief in **determinism**. While free will implies having a mind, the things we do with our minds may themselves be determined.
- Free will is an ambiguous concept and can denote **having a choice**, **not being coerced** or **constrained**, **voluntary behaviour**, and **deliberate control.** The more automatic our behaviours, the weaker our subjective experience of freedom becomes.
- Stimulation of the brains of conscious patients supports the view that free will is part of our experience of being a person. This is demonstrated by **psychological reactance** and **intrinsic motivation/self-determination**.
- Definitions of abnormality, and the diagnosis/treatment of mental disorders, often involve judgements about free will. **Diminished responsibility** is a legally acceptable defence (for murder).
- James distinguished between **soft** and **hard determinism**, the former allowing **conscious mental life** (CML) to be the immediate cause of behaviour.
- Freud extended the law of determinism to mental phenomena (**psychic determinism**). His concept of **overdetermination** allows the conscious mind a role in influencing behaviour, and he often tried to interpret the **meaning** of patients' thoughts and behaviours (rather than looking for causes).
- Skinner's **radical behaviourism** involves a rejection of **explanatory fictions**, such as free will and other mentalistic terms. The **illusion of free will** survives because the environmental causes of behaviour are often hidden from us.
- Rogers stressed self-actualisation, psychological growth, and the freedom to choose. But he also argued that science shows people to be complex machines and not free. The **fully functioning person** chooses to act the way s/he must.
- **Sociobiologists**, by explaining all individual and social behaviour in terms of genes selected through evolution, seem to deny guilt and responsibility. But this involves a **false dichotomy** between biological and cultural/social.
- According to Rose *et al.*, what makes humans unique is that our biology has made us into creatures who are constantly re-creating our own psychic and material environments.
- According to Dennett, determinism isn't the same as **fatalism**, and conscious life is a crucial **design feature** of human beings.
- Although the ultimate aim of **reductionism** is to account for all phenomena (including psychological) in terms of microphysics, **any** attempt to explain something in terms of its components is reductionist.
- Rose identifies reductionism as **methodology**, **theory reduction**, **philosophical** and **ideology** (**neurogenetic determinism**).
- From a strictly **scientific** perspective, it should be impossible for a non-physical mind to influence the physical brain. However, from an **evolutionary** perspective, consciousness should be able to produce behaviour change.
- Theories of the **mind–brain relationship** are either **dualist** or **monist**. Dualist theories include Descartes' original dualism, **epiphenomenology**, **interactionism** and **psychophysical parallelism**.
- Monist theories include **mentalism/idealism**, **peripheralist materialism** (such as Skinner's radical behaviourism) and **centralist materialism/mind–brain identity theory.**
- Skinner's definition of mental phenomena as **covert/internal actions** is reductionist, as is **eliminative materialism**. The latter confuses **type** with **token identity**.
- **Emergent properties** (such as intelligence and consciousness) reflect the activity of the brain as a **system** and couldn't possibly be predicted from analysis of its components.
- While most materialists are also reductionists, some argue that psychology and neurophysiology constitute distinct **levels of description/universes of discourse,** which cannot replace each other. Freud, for example, believed in the **autonomy of psychological explanation**.

Links with other topics/chapters

- *Divided attention* is contrasted with *selective* (or focused) *attention*. These refer to the mechanisms that determine what we become consciously aware of at any one time, and how much information we can process at the same time, respectively (Chapter 13).
- The issues of diminished responsibility and moral accountability are related to research showing brain abnormalities in *murderers* and other *offenders with APD* (Chapter 46).
- Free association is one of the therapeutic techniques involved in Freud's *psychoanalysis* (Chapter 45).
- The behaviour therapist's dilemma is closely related to some of the most fundamental ethical issues faced by *psychologists as agents of change* (Chapters 45 and 48).
- Together with *positivism, mechanism,* determinism and *empiricism,* reductionism represents part of '*classical*' *science* (Chapter 3).

Nativism, empiricism and interactionism

Are nativism and empiricism mutually exclusive?

What do we mean by 'nature'?

Self-duplication

Protein synthesis

Neurogenetic determinism: are there genes 'for' anything?

What do we mean by 'nurture'?

Shared and non-shared environments

Gene–environment correlations

Gene–environment interactions

Behaviour genetics and heritability

Behaviour genetics

Heritability

Conclusions

Chapter summary

Links with other topics/chapters

50

NATURE AND NURTURE



INTRODUCTION AND OVERVIEW

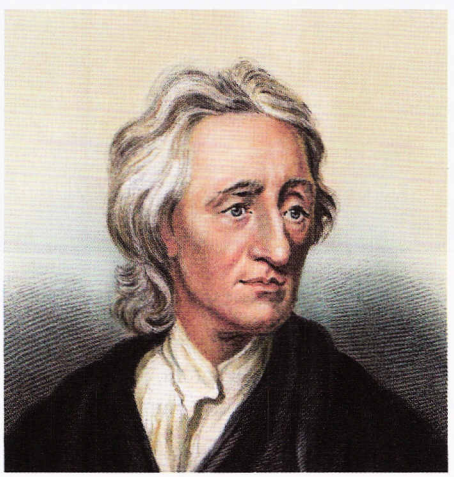
The debate concerning the influence of nature and nurture (or heredity and environment) on human behaviour is one of the longest-running, and most controversial, both inside and outside psychology. It deals with some of the most fundamental questions that human beings (at least those from western cultures) ask about themselves, such as 'How do we come to be the way we are?' and 'What makes us develop in the way we do?'

These and similar questions have been posed (sometimes explicitly, sometimes implicitly) throughout this book in relation to a wide range of topics. These include perceptual abilities (Chapter 16), language acquisition (Chapter 19), aggression (Chapter 29), attachment (Chapter 32), gender development (Chapter 36), intelligence (Chapter 41), and schizophrenia and depression (Chapter 44). In some of these examples, (such as language and perception) the focus of the debate is on an ability shared *by all human beings,* while in others (such as intelligence and schizophrenia) the focus is on *individual differences.*

In both cases, however, certain assumptions are made about the exact meaning of 'nature' and 'nurture', as well as about how they're related. By distinguishing different types of environment, such as *shared* and *non-shared,* it's easier to understand the relationship between nature and nurture, including *gene–environment correlation* and *gene–environment interaction.*

NATIVISM, EMPIRICISM AND INTERACTIONISM

Nativism is the philosophical theory according to which knowledge of the world is largely innate or inborn: nature (heredity) is seen as determining certain abilities and capacities. The French philosopher Descartes was a seventeenth-century nativist theorist who, as we noted in Chapter 3, had an enormous impact on science in general, including psychology. At the opposite philosophical extreme is *empiricism,* associated mainly with seventeenth-century British philosophers, and even more influential on the development of psychology. A key empiricist was Locke, who believed that at birth the human mind is a *tabula rasa* (or 'blank slate'). This is gradually 'filled in' by learning and experience.



John Locke (1632–1704)

ASK YOURSELF...

- Try to identify psychological (and other) theories that adopt an *extreme* position regarding the nature–nurture issue.
- Which particular features of the theories made you classify them in this way?

Nativism and empiricism are extreme theories in that they were trying to answer the question 'Is it nature or nurture?', as if only one or the other could be true. Early psychological theories tended to reflect these extremes, as in Gesell's concept of *maturation* and Watson's *behaviourism.*

Box 50.1 Gesell and Watson: two extreme viewpoints

- According to Gesell (1925), one of the American pioneers of developmental psychology, *maturation* refers to genetically programmed patterns of change. The instructions for these patterns are part of the specific hereditary information passed on at the moment of conception (Bee, 2000). All individuals will pass through the same series of changes, in the same order, making maturational patterns *universal* and *sequential*. They're also 'relatively impervious to environmental influence'.
- Gesell was mainly concerned with infants' psychomotor development (such as grasping and other manipulative skills), and locomotion (such as crawling and walking). These abilities are usually seen as 'developing by themselves', according to a genetically determined timetable. Provided the baby is physically normal, practice or training aren't needed – the abilities just 'unfold'.
- For Watson (1925), environmental influence is all-important (see Chapters 2 and 3), and human beings are completely malleable:

  Give me a dozen healthy infants, well-formed, and my own specialised world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – a doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, abilities, vocations and race of his ancestors.

- Watson (1928) also claimed that there's no such thing as an inheritance of capacity, talent, temperament, mental constitution and character:

  The behaviourists believe that there is nothing from within to develop. If you start with the right number of fingers and toes, eyes, and a few elementary movements that are present at birth, you do not need anything else in the way of raw material to make a man, be that man genius, a cultured gentleman, a rowdy or a thug.

ASK YOURSELF...

- Try to identify psychological theories and areas of research in which the process of maturation plays an important role. Examples are most likely to be found in developmental psychology.

The concept of maturation continues to be influential within psychology. Not only does maturation explain major biological changes, such as puberty (see Chapter 37) and physical aspects of ageing (see Chapter 39), but all stage theories of development assume that maturation underpins the universal sequence of stages. Examples include Freud's *psychosexual theory* (see Chapter 35), Erikson's *psychosocial theory* (see Chapters 37, 38 and 39), and Piaget's *theory of cognitive development* (see Chapter 34). Watson's extreme empiricism (or *environmentalism*) was adopted in Skinner's *radical behaviourism*, which represents a major model of both normal and abnormal behaviour (see Chapters 2 and 45).

Are nativism and empiricism mutually exclusive?

As noted in Box 50.1, maturationally determined developmental sequences occur regardless of practice or training. However, as Bee (2000) points out:

> These powerful, apparently automatic maturational patterns require at least some minimal environmental support, such as adequate diet and opportunity for movement and experimentation.

At the very least, the environment must be *benign*, that is, it mustn't be harmful in any way, preventing the ability or characteristic from developing. More importantly, the ability or characteristic cannot develop without environmental 'input'. For example, the possession of a language acquisition device (LAD) as proposed by Chomsky (1965: see Chapter 19) must be applied to the particular linguistic data provided by the child's linguistic community, so the child will acquire only *that* language (although it could just as easily have acquired *any* language). This is an undeniable fact about language acquisition, which Chomsky himself recognised.

Another example of the role of the environment involves vision. One of the proteins required for development of the visual system is controlled by a gene whose action is triggered only by visual experience (Greenough, 1991). So some visual experience is needed for the genetic programme to operate. Although every (sighted) child will have some such experience under normal circumstances, examples like these tell us that maturational sequences don't simply 'unfold'. The system appears to be 'ready' to develop along particular pathways, but it requires experience to trigger the movement (Bee, 2000).

Another way of considering the interplay between nature and nurture is to look at Freud's and Piaget's developmental theories. Although maturation underlies the sequence of stages in both theories, the role of experience is at least as important.

Box 50.2 Nature and nurture in Freud's and Piaget's developmental theories

- For Freud it's not the sexual instinct itself that matters, but rather the reactions of significant others (especially parents) to the child's attempts to satisfy its sexual needs. Both excessive frustration and satisfaction can produce long-term effects on the child's personality, such as fixation at particular stages of development (see Box 35.1, page 603). This makes him an *interactionist*:

  The constitutional factor must await experiences before it can make itself felt; the accidental factor must have a constitutional basis in order to come into operation ... (Freud, 1905b/1953b, in Miller, 2002)

  The demands of civilisation are as real as the demands of the body.
- Although Freud is commonly referred to as an instinct theorist (suggesting that he was a nativist), his concept of an instinct was very different from the earlier view of unlearned, largely automatic (pre-programmed) responses to specific stimuli (based on non-human species: see Chapter 9). Instead of using the German word '*Instinkt*', he used '*Trieb*' (drive), which denotes a relatively undifferentiated form of energy capable of almost infinite variation through experience (see Box 2.2, page 19).
- As a biologist, Piaget stressed the role of *adaptation* to the environment. This involves the twin processes of *assimilation* and *accommodation*, which in turn are related to (dis-)equilibration (see Chapter 34). These mechanisms are part of the biological 'equipment' of human beings, without which their intelligence wouldn't change (the individual wouldn't progress through increasingly complex stages of development).
- However, the infant actively explores its environment and constructs its own knowledge and understanding of the world (the child as scientist: Rogoff, 1990). According to Piaget (1970), intelligence consists:

  ... neither of a simple copy of external objects nor of a mere unfolding of structures preformed inside the subject, but rather ... a set of structures constructed by continuous interaction between the subject and the external world.

Both Freud's and Piaget's theories demonstrate that:

> There is a trade-off in nature between pre-specification, on the one hand, and plasticity, on the other, leading ultimately to the kind of flexibility one finds in the human mind ... (Karmiloff-Smith, 1996)

Maturation is an example of what Karmiloff-Smith means by 'pre-specification', and inborn biases represent



Annette Karmiloff-Smith

another example. For example, very young babies already seem to understand that unsupported objects will fall (move downward), and that a moving object will continue to move in the same direction unless it encounters an obstacle (Spelke, 1991: see Chapter 16). However, these 'pre-existing conceptions' are merely the beginning of the story. What then develops is the result of experience filtered through these initial biases, which constrain the number of developmental pathways that are possible (Bee, 2000).

Both Freud and Piaget focused on interaction between biological maturation and experience with the physical world (especially Piaget) and the social world (especially Freud). Bandura's theory of *triadic reciprocal causation* (e.g. Bussey & Bandura, 1999) adds the person's *behaviour* to the interaction: one's behaviour can *change* the environment.

According to Bee, no developmental psychologists today would take the 'Is it nature or nurture?' form of the debate seriously. Essentially, every facet of a child's development is a product of some pattern of interaction between the two. Until fairly recently, however, the theoretical pendulum was well over towards the nurture/environmental end of the continuum. In the last decade or so, there's been a marked swing back towards the nature/biological end, partly because of the impact of sociobiology and its more recent off-shoot evolutionary psychology (see Chapter 2).

ASK YOURSELF...

- Draw a diagram, representing a continuum, with 'extreme nativism' (nature) at one end and 'extreme empiricism' (nurture) at the other.
- Now place theories along the continuum to indicate the emphasis they give to either nature or nurture – or both.
- The theories can be drawn from any area of psychology. They're likely to include those identified in the first 'Ask Yourself ...', but should also reflect the approaches discussed in Chapter 47. (Some examples are given in Figure 50.3, page 905.)

What do we mean by 'nature'?

In the *Introduction and overview*, we noted that some examples of the nature–nurture debate involve abilities or capacities common to all human beings (such as language and perception), while others involve individual differences (such as intelligence and schizophrenia). According to Plomin (1994), it's in the latter sense that the debate 'properly' takes place, and much of the rest of this chapter will reflect the 'individual differences' approach.

Within *genetics* (the science of heredity), 'nature' refers to what's typically thought of as inheritance, that is, differences in genetic material (chromosomes and genes) transmitted from generation to generation (from parents to offspring). The 'father' of genetics, Gregor Mendel (1895), explained the difference between different genes in terms of smooth and wrinkled seeds in garden peas. Similarly, modern human genetics focuses on genetic differences between individuals, reflecting the use of the word 'nature' by Galton, who coined the phrase nature–nurture in 1883 as it's used in the scientific arena (Plomin, 1994).



Gregor Mendel (1822–1884)

So, what are genes? Genes are the basic unit of hereditary transmission, consisting of large molecules of deoxyribonucleic acid (DNA). These are extremely complex chemical chains, comprising a ladder-like, double helix structure (discovered by Watson & Crick in 1953: see Figure 50.1).

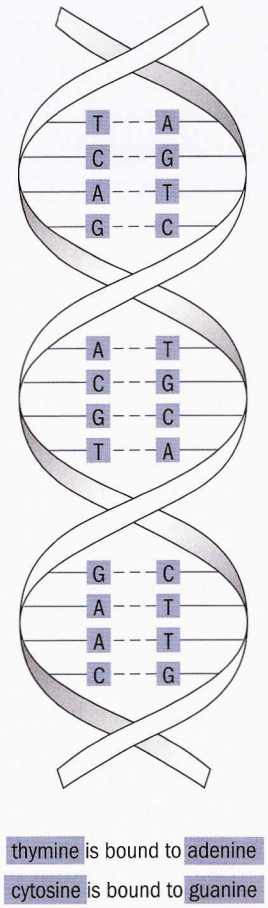


Figure 50.1 The structure of a DNA molecule represented schematically. This shows its double-stranded coiled structure and the complementary binding of nucleotide bases, guanine (G) to cytosine (C) and adenine (A) to thymine (T)

The genes, which occur in pairs, are situated on the chromosomes, which are found within the nuclei of living cells. The normal human being inherits 23 pairs of chromosomes, one member of each pair from each parent. The twenty-third pair comprises the sex chromosomes, which are two Xs in females, and an X and a Y in males (see Chapter 36 and Figure 50.2).

The steps of the gene's double helix (or 'spiral staircase': Plomin, 1994) consist of four nucleotide bases (adenine, thymine, cytosine, and guanine). These can occur in any order on one side of the double helix, but the order on the other side is always fixed, such that adenine always pairs with thymine, and cytosine always pairs with guanine. Taking just one member of each of the 23 pairs of chromosomes, the human *genome* comprises more than three billion nucleotide base pairs (Plomin, 1994). Two major functions of genes are *self-duplication* and *protein synthesis.*

Self-duplication

DNA copies itself by unzipping in the middle of the spiral staircase, with each half forming its complement: when a cell divides, all the genetic information (chromosomes and genes) contained within the cell nucleus is reproduced. This means that the 'offspring' cells are identical to the 'parent' cells (*mitosis*), but this process applies only to *non-gonadal* (non-reproductive) cells (such as skin, blood, and muscle cells).

The reproductive (or *germ*) cells (ova in females, sperm in males) duplicate through *meiosis,* whereby each cell contains only half the individual's chromosomes and genes. Which member of a chromosome pair goes to any particular cell seems to be determined randomly. The resulting germ cells (*gametes*), therefore, contain 23 chromosomes, one of which will be either an X (female) or a Y (male). When a sperm fertilises an ovum, the two sets of chromosomes combine to form a new individual with a full set of 46 chromosomes.

Protein synthesis

The 'genetic code' was 'cracked' in the 1960s. Essentially, DNA controls the production of ribonucleic acid (RNA) within the cell nucleus. This 'messenger' RNA moves outside the nucleus and into the surrounding cytoplasm, where it's converted by ribosomes into sequences of amino acids, the building blocks of proteins and enzymes.

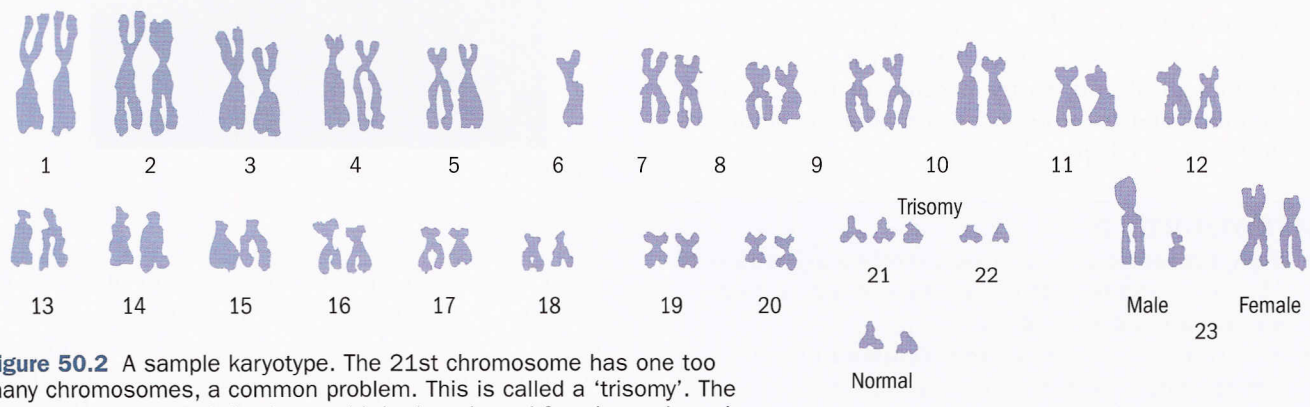


Figure 50.2 A sample karyotype. The 21st chromosome has one too many chromosomes, a common problem. This is called a 'trisomy'. The 23rd chromosome pair is shown with both male and female versions. In a normal karyotype, only one such pair would be found

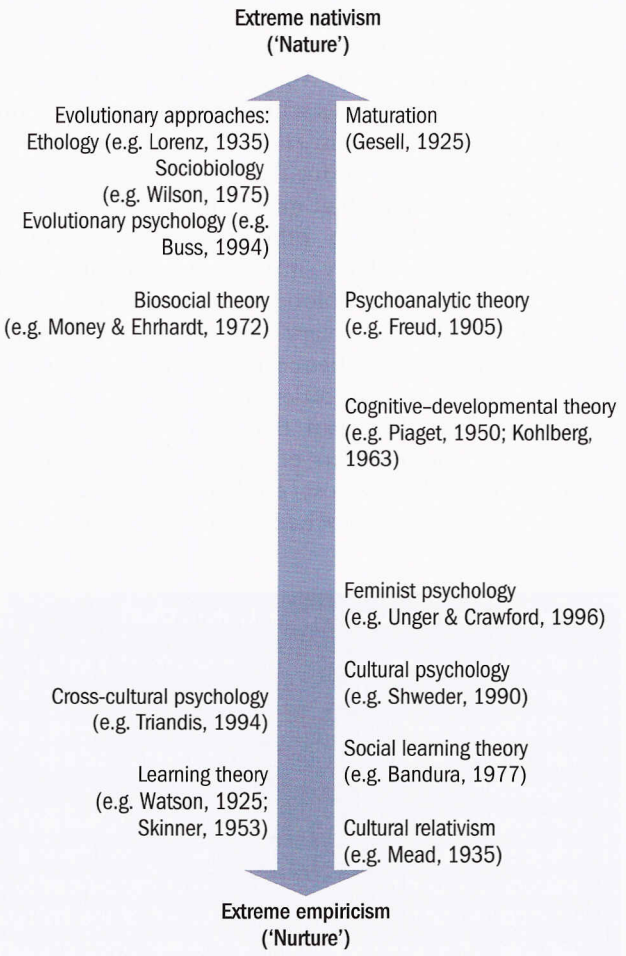


Figure 50.3 A continuum representing the position of various psychological (and other) theories on the nature–nurture debate

Genes that code for proteins and enzymes are called *structural* genes, and they represent the foundation of classical genetics (Plomin, 1994). The first single-gene disorders discovered in the human species involved metabolic disorders caused by *mutations* (spontaneous changes) in structural genes. A much-cited example is phenylketonuria, which is discussed in relation to gene–environment interaction (see below, page 909).

Most genes are *regulator* genes, which code for products that bind with DNA itself and serve to regulate other genes. Unlike the structural genes which are 'deaf' to the environment, the regulator genes communicate closely with the environment and change in response to it (Plomin, 1994).

Neurogenetic determinism: are there genes 'for' anything?

Several claims have been made in recent years about the discovery of genes 'for' a wide range of complex human behaviours (*reductionism as ideology:* Rose, 1997). Related to this is what Rose calls *neurogenetic determinism,* the claim that there's a direct causal link between genes and behaviour. This involves the false assumption that causes can be classified as *either* genetic *or* environmental, and there are additional reasons for doubting the validity of neurogenetic determinism.

Objections to neurogenetic determinism

ASK YOURSELF...
- Try to formulate some arguments against neurogenetic determinism.

- The phrase 'genes for' is a convenient, but misleading, shorthand used by geneticists. In the case of eye colour, for example (which, from a genetic point of view, is one of the more simple characteristics – or phenotypes), there's a difference in the biochemical pathways that lead to brown and to blue eyes. In blue-eyed people, the gene for a particular enzyme (which catalyses a chemical transformation en route to the synthesis of the pigment) is either missing or non-functional for some reason. A gene 'for blue eyes' now has to be reinterpreted as meaning 'one or more genes in whose absence the metabolic pathway that leads to pigmented eyes terminates at the blue-eye stage' (Rose, 1997).
- More generally, genes *don't* cause behaviour. They're chemical structures that have chemical effects on the body, and so influence behaviour through their effects on the body's response to the environment. So there are *no* genes 'for', say, neuroticism (N), although there's plenty of evidence that N is genetically influenced (such as inheriting a nervous system that's particularly sensitive to stress). Similarly, there are *no* genes 'for' alcoholism, but genetic factors may in some way affect the body's sensitivity to alcohol:

  ... Thus all relationships between genes and behaviour are of an indirect and not a direct nature ... (Schaffer, 2004)

- Claridge & Davis (2003) make the point like this:

  ... Genes code for very precise, literally microscopic, bits of biological material (proteins) that are both physically and conceptually very distant from the complex behavioural and psychological characteristics which they are supposed to – and perhaps in some sense do – influence. But it is unlikely that there are genes, or sets of genes, 'for' impulsivity, the preference for gay relationships, religiosity, anxiety, or even serious mental disorders, such as schizophrenia. The route from genes to behaviour is likely to be much more tortuous than that and, for any particular characteristic, to involve a multitude of genes and interactions among them – as well as an interplay between genes and environmental factors ...

- The search for genes that 'cause' specific behaviours or characteristics is called *molecular genetic research* (MGR). According to Joseph (2003), there are two major

reasons why we *shouldn't* expect MGR in psychiatry or psychology to provide much useful information – now or in the future:

1. it presupposes that family, twin and adoption studies have demonstrated the role of genetic factors; the serious limitations of these methods are discussed in Chapter 41
2. proponents of MGR claim that techniques such as gene therapy can be used to prevent or cure diseases influenced by identified genes; this is a commendable goal, but does society wish to use this technology to alter 'intelligence genes' or those associated with unpleasant personalities?

CRITICAL DISCUSSION 50.1 The ethics of MGR

- It's understandable that researchers would want to alleviate the suffering of those with, say, schizophrenia to help restore them to productive lives. But even if we accept the behaviour genetic argument that genes exert an important influence on behaviour and IQ differences, we could still question the necessity of trying to identify the genes involved.
- According to Plomin *et al.* (1997):

  Psychology is at the dawn of a new era in which molecular genetic techniques will revolutionize genetic research in psychology by identifying specific genes that contribute to genetic variance for complex dimensions and disorders ... The breathtaking pace of molecular genetics ... leads us to predict that psychologists will routinely use DNA markers as a toll in their research to identify some of the relevant genetic differences among individuals.

- But although behaviour genetic researchers continue to look for 'IQ genes', Joseph (2003) believes the search has been unsuccessful. Despite this failure, Plomin (1999) expects that he'll eventually succeed, and that he'll find genetic differences along race and social class lines. For Joseph:

  ... The point is not whether group differences in intelligence genes will be found – they won't – but rather the cavalier way in which investigators minimize the potential social impact of their research. Would Plomin have the same attitude if his research, for example, found that more Jews than non-Jews had ... [genes] ... associated with greed? Wouldn't there be a justifiable uproar that such research was even being done?

  We've just identified another example of *socially sensitive research* (SSR) (see Chapter 48).

◎ MGR also presupposes that the phenotypes (whether mental disorders or intelligence) are 'real' and can be reliably and validly identified and measured. But how can, for example, 'schizophrenia susceptibility genes' (in reality, a mere association between 'schizophrenia' and genetic *markers* – not the same as finding an actual gene) be found when American psychiatrists cannot 'figure out who really is schizophrenic or what schizophrenia really is' (DeLisi *et al.*, 2002, in Joseph, 2003)?

◎ As more is learned about the human genome, geneticists come to realise that many supposedly 'single-gene disorders' result from different gene mutations in different people. They may show a similar clinical picture, such as high blood cholesterol levels with an enhanced risk of coronary heart disease. However, the gene mutation, and hence the enzyme malfunction, that results in the disorder may be very different in each case. This also means that a drug which effectively treats the condition in one person may simply not work in another, whose cholesterol accumulation is caused by different biochemical factors (Rose, 1997).

Box 50.3 Is there more to heredity than DNA?

- Cells not only inherit genes, they also inherit a set of instructions that tell the genes when to become active, in which tissue, and to what extent. Without this '*epigenetic*' instruction manual, multicellular organisms would be impossible.
- Every cell, whether a liver or skin cell, inherits exactly the same set of genes. However, the manual has different instructions for different cell types, allowing the cell to develop its distinctive identity. It seems that the instruction manual is wiped clean during the formation of germ cells, ensuring that all genes are equally available, until the embryo begins to develop specific tissues. However, there's evidence to suggest that changes in the epigenetic instruction manual can sometimes be passed from parent to offspring.
- For example, pregnant women facing the brunt of the Nazi siege of the Netherlands at the end of World War II were reduced to near starvation. Some miscarried, but if they successfully gave birth, their babies appeared quite normal after a period of catch-up growth, and seemed no different from their better-nourished peers when tested at age 18.
- Many of these war babies now have children of their own (the grandchildren of the war-time pregnant mothers). Even girls who'd themselves been of normal weight at birth produced babies who were either underweight or grew into small adults, despite the post-war generation being well fed. Thus, there's a sort of 'sleeper effect', whereby the effects of starvation skipped a generation.
- Such 'awkward' findings are very difficult for geneticists to explain. However, one possible explanation is in the form of an epigenetic phenomenon called 'imprinting'. Genes exist in pairs, and they behave in exactly the same way regardless of which parent they come from. But in some cases an imprinted gene is activated only if it

comes from the father, and in other cases only if it comes from the mother.

- Some sort of 'mark' must persist through the generations to tell the offspring's cells which genes to re-imprint. Whatever the precise mechanism by which they operate, the existence of imprinted genes demonstrates that not all genes are wiped totally clean of their epigenetic marks.

(Based on Ceci & Williams, 1999; Vines, 1998)

What do we mean by 'nurture'?

ASK YOURSELF...

- What do you understand by the term 'environment'?
- Try to identify different uses of the term and different 'levels' at which the environment exists.

When the term 'environment' is used in a psychological context, it usually refers to all those *post-natal* influences (or potential sources of influence) lying *outside/external* to the individual's body. These include other people, both members of the immediate family and other members of society, opportunities for intellectual stimulation, and the physical circumstances of the individual's life ('environs' or 'surroundings'). These influences are implicitly seen as impinging on a passive individual, who is *shaped* by them.

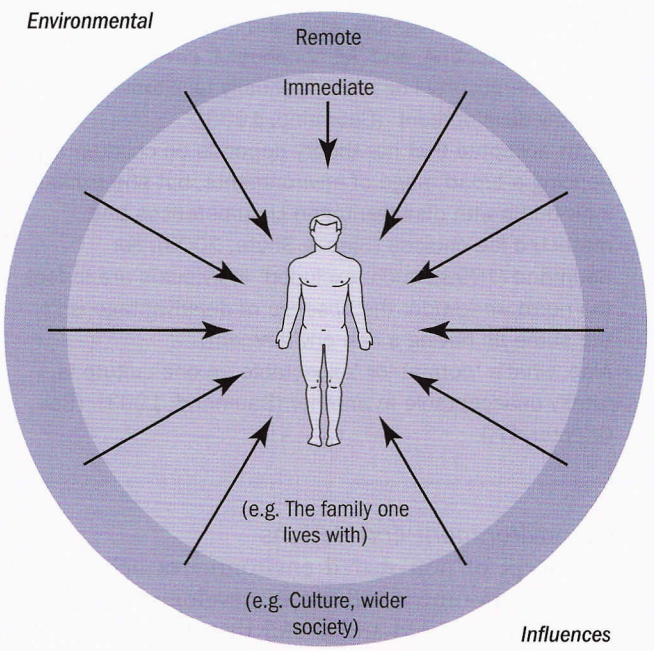


Figure 50.4 Traditional, extreme behaviourist/environmentalist view of the environment as a set of external, post-natal influences acting upon a purely passive individual

On all three counts, this view of the environment seems inadequate. It isn't just the individual person who's 'immersed in' or influenced by his/her environment, but during mitosis the specific location of any particular cell is constantly changing as the cluster of cells of which it's a part constantly grows. At an even more micro-level, the cell nucleus (which contains the DNA) has as its environment the cytoplasm of the cell.

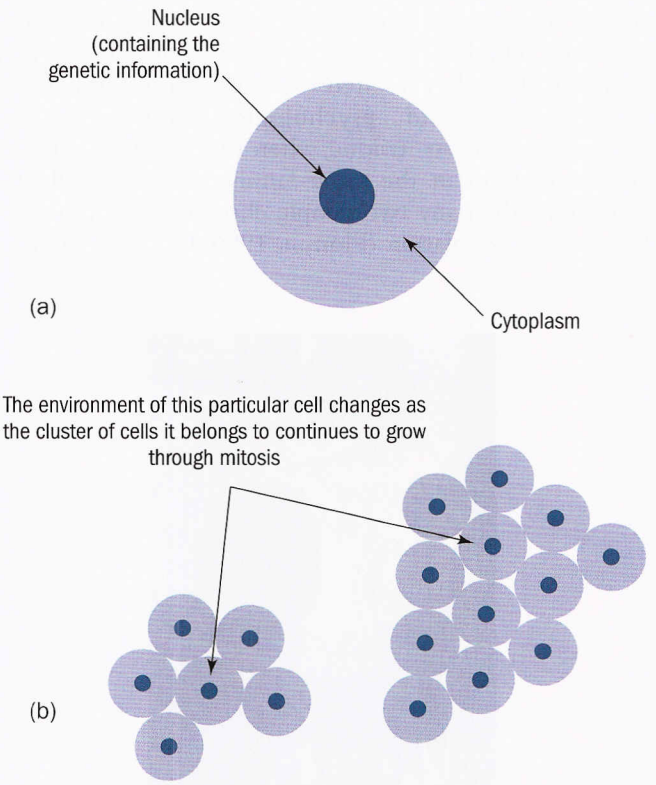


Figure 50.5 For the nucleus of an individual cell, the environment is the surrounding cytoplasm (a). The specific location of any particular cell is constantly changing during mitosis (b)

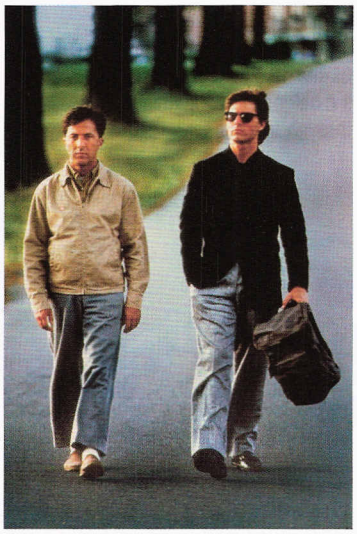
As we noted in Chapter 41, pre-natal non-genetic factors (such as the mother's excessive alcohol consumption during pregnancy) account for the largest proportion of biologically caused learning difficulties and lowered IQ. Finally, and most significantly, not only is 'nature' and 'nurture' a false dichotomy (see *Conclusions*), but it's invalid to regard the environment as existing independently of the individual (that is, objectively). Not only do people's environments influence them, but people make their own environments (Scarr, 1992: see Box 50.4). A way of thinking about how people do this is through the concept of *non-shared environments,* which is, in turn, related to *gene–environment correlation.*

Shared and non-shared environments

When the environment is discussed as a set of (potential) influences that impinge on the individual, it's often broken down into factors such as overcrowding, poverty,

socio-economic status (SES), family break-up, marital discord, and so on. In studies of intelligence, for example, children are often compared in terms of these environmental factors: children from low SES groups are commonly found to have lower IQs than those from high SES groups (see Chapter 41).

When families are compared in this way, it's assumed that children from the same family will all be similarly and equally affected by those environmental factors (*shared environment*). But for the majority of characteristics, most children within the same family aren't very similar. In fact, they're often extremely varied in personality, abilities and psychological disorders. This observation is most striking when two adopted children are brought up in the same family: they're usually no more alike than any two people chosen at random from the general population (Plomin, 1996; Rutter & Rutter, 1992).



Dustin Hoffman as the autistic brother of Tom Cruise in *Rain Man*. Both genetic and non-shared environmental factors are likely to have contributed to their different characteristics and abilities

This substantial within-family variation *doesn't* mean that family environment is unimportant. Rather, as Plomin (1996) puts it:

> Environmental influences in development are doled out on an individual-by-individual basis rather than on a family by-family basis.

In other words, differences between children growing up together is exactly what we'd expect to find, because it's the *non-shared environment* which has greater influence on development than the shared environment. Different children in the same family have different experiences. For example, Dunn & Plomin (1990) found that the ways in which parents respond differently to their different children (*relative differences*) are likely to be much more influential than the overall characteristics of the family (*absolute differences*). So, it may matter very little whether children are brought up in a home that's less loving or more punitive than average, whereas it may matter considerably that one child receives less affection or more punishment than his/her sibling. These findings imply that:

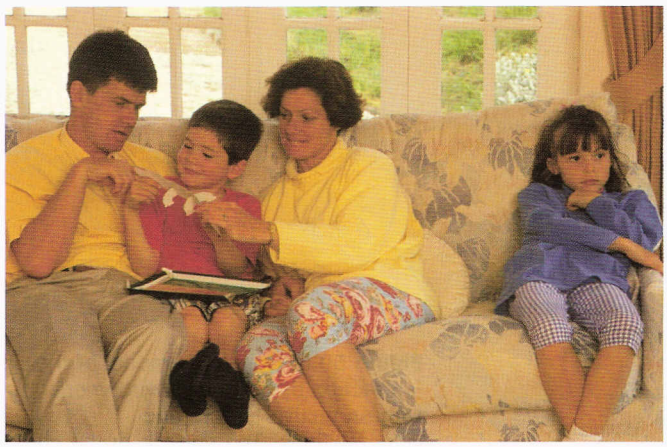
> ... the unit of environmental transmission is not the family, but rather micro-environments within families ... (Plomin & Thompson, 1987)

CRITICAL DISCUSSION 50.2 Are shared environments really that unimportant?

- Scarr (1992) acknowledges the influence of the environment on behaviour, but claims that, in reality, the environment is very similar for many individuals.
- According to the 'average expectable environment', assuming a 'normal' environment, genes will express their potential. Environmental variations within the normal range are functionally equivalent. So, provided the environment is 'normal', environmental changes (such as extra stimulation as provided by early enrichment programmes: see Chapter 41) will have no effect. Only if the environment is outside the range of normality (such as in abusive families), will such change significantly alter behavioural outcomes.
- Scarr's theory implies that children could be reassigned to and brought up by different families, without significantly affecting how they turn out. For example, differences in *parenting style* make little difference, provided the parents are 'good enough'.
- But Scarr doesn't specify what she means by 'good enough' parenting, and 'All nonabusive environments above the poverty line are not equally facilitative of healthy development' (Baumrind, 1993).
- Scarr accepted that her theory depends on children experiencing a broad range of environments, but she excluded individuals with disadvantaged circumstances and restricted life choices (Slee & Shute, 2003). For Baumrind (1993), such 'excluded' individuals are in fact the norm worldwide: the *absence* of disadvantage *isn't* the same as having a rich environment.
- Also, what's 'normal 'or 'expectable' in one culture is totally unacceptable in another (Baumrind, 1993). (See Chapter 47.)

Gene–environment correlations

The concept of non-shared environments helps explain how the environment influences development, which is far more sophisticated and useful than the original 'Is it nature or nurture?' question (see above). However, we need to understand the processes by which non-shared environments arise: why do parents treat their different children differently, and how do children in the same



Differences *within* the same family may be more important than those *between* different families

family come to have different experiences? In trying to answer these questions, psychologists and behaviour geneticists (see page 911) have, paradoxically, stressed the role of *genetic differences*. A major example of this approach is the concept of *gene–environment correlation*.

Box 50.4 Gene–environment correlations

Plomin *et al.* (1977) identified three types of gene–environment correlation.

- **Passive gene–environment correlations:** Children passively inherit from their parents environments that are correlated with their genetic tendencies. For example, parents of above-average IQ are likely to provide a more intellectually stimulating environment than lower-IQ parents.
- **Reactive gene–environment correlations:** Children's experiences derive from the reactions of other people to the children's genetic tendencies. For example, babies with a sunny, easy-going and cheerful disposition/temperament are more likely to elicit friendly reactions from others than miserable or 'difficult' babies (see Key Study 50.1). It's widely accepted that some children are easier to love (Rutter & Rutter, 1992).
- **Active gene–environment correlations:** Children construct and reconstruct experiences consistent with their genetic tendencies. Trying to define the environment independently of the person is futile, since every person's experience is different. According to Plomin (1994):

  Socially, as well as cognitively, children select, modify and even create their experiences. Children select environments that are rewarding or at least comfortable, niche-picking. Children modify their environments by setting the background tone for interactions, by initiating behaviour, and by altering the impact of environments ... they can create environments with their own propensities, niche-building.

Gene–environment interactions

The link between the concepts of gene–environment correlations and non-shared environments helps to explain how the environment exerts its influence. Another way of considering the environment's impact is to identify examples of *gene–environment interactions*.

Genetically speaking, *phenylketonuria* (PKU) is a simple characteristic. It's a bodily disorder caused by the inheritance of a single recessive gene from each parent. Normally, the body produces the amino acid phenylalanine hydroxylase, which converts phenylalanine (a substance found in many foods, particularly dairy products) into tyrosine. But in the presence of the two recessive PKU genes, this process fails and phenylalanine builds up in the blood, depressing the levels of other amino acids. Consequently, the developing nervous system is deprived of essential nutrients, leading to severe mental retardation and, without intervention, eventually leading to death (see Chapter 40).

The relationship between what the child inherits (the two PKU genes – the *genotype*) and the actual signs and symptoms of the disease (high levels of phenylalanine in the blood, and mental retardation – the *phenotype*) appears to be straightforward, direct, and inevitable: given the genotype, the phenotype will occur. However, a routine blood test soon after birth can detect the presence of the PKU genes, and an affected baby will be put on a low-phenylalanine diet. This prevents the disease from developing. In other words, an environmental intervention will prevent the phenotype from occurring. According to Jones (1993):

> [The] nature [of children born with PKU genes] has been determined by careful nurturing and there is no simple answer to the question of whether their genes or their environment is more important to their well-being.

ASK YOURSELF...

- Try to identify some examples of gene–environment interactions that involve behaviour, as distinct from bodily diseases such as PKU. Two relevant areas are intelligence (Chapter 41) and schizophrenia (Chapter 44).

If there's no one-to-one relationship between genotype and phenotype in the case of PKU, it's highly likely that there'll be an even more complex interaction in the case of intelligence, certain mental disorders, personality, and so on. One such example is *cumulative deficit*, which was discussed in Chapter 41 (see page 726). Another is the concept of *facilitativeness*.

According to Horowitz (1987, 1990), a highly *facilitative* environment is one in which the child has loving and responsive parents, and is provided with a rich array of stimulation. When different levels of facilitativeness are combined with a child's initial *vulnerabilities/susceptibilities*, there's an interaction effect. For example, a *resilient* child (one with many protective factors and a

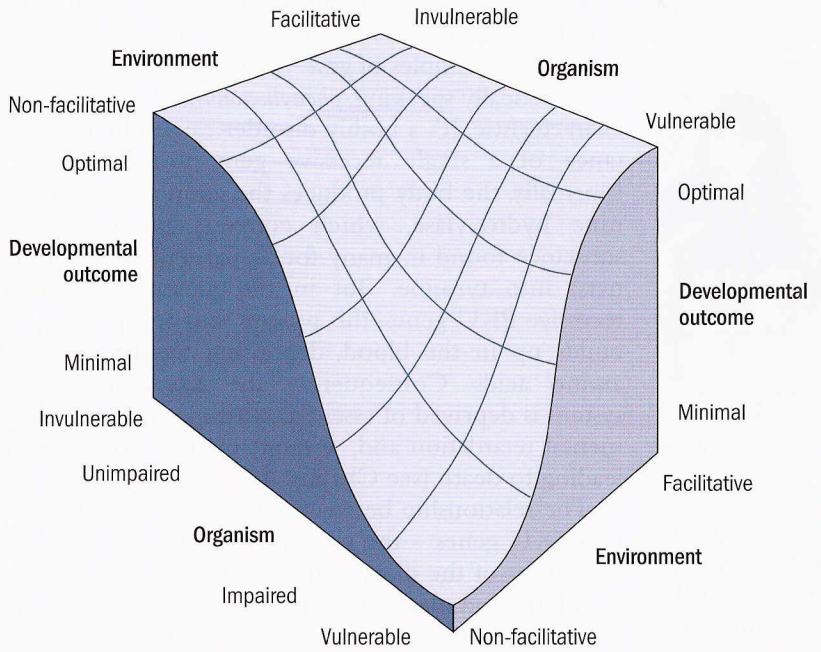


Figure 50.6 Horowitz's model of the interaction of a child's environment with protective factors and vulnerabilities. The surface of the curve illustrates the level of a developmental stage, such as IQ or social skills. According to this model, if a low-birthweight child is reared in a poor environment, then it's likely that child will do less well than other children reared with a different combination of vulnerabilities and environment

few vulnerabilities) may do quite well in a poor environment. Equally, a *non-resilient* child may do quite well in a highly facilitative environment. Only the *non-resilient* child in a *poor* environment will do really poorly (see Figure 50.6).

This interactionist view is supported by a 30-year longitudinal study that took place on the Hawaiian island of Kanuai.

KEY STUDY 50.1 Werner's 'Children of the Garden Island'

- Starting in 1955, Werner and her colleagues studied all of the nearly 700 children born on Kanuai in a given period, and followed them up at the ages of 2, 10, 18 and 31–32.
- Werner became interested in 72 'high risk'/'vulnerable' children. They'd been exposed before the age of two to 4 or more of the following risk factors: reproductive stress (either difficulties during pregnancy and/or during labour and delivery), and discordant and impoverished home lives (including divorce, uneducated, alcoholic or mentally disturbed parents).
- Despite their early exposure to these risk factors, these children went on to develop healthy personalities, stable careers and strong interpersonal relationships.
- As babies, these resilient children were typically described as 'active' 'affectionate', 'cuddly', 'easy-going' and 'even-tempered', with no eating or sleeping habits causing distress to their carers. These are all temperamental characteristics that elicit positive responses from both family members and strangers.
- There were also environmental differences between the resilient and non-resilient children, such as smaller family size, at least two years between themselves and the next child, and a close attachment to at least one carer (relative or regular baby-sitter). They also received considerable emotional support from outside the family, were popular with their peers, and had at least one close friend. School became a refuge from a disordered household.
- Sixty-two of the resilient children were studied after reaching their thirties. As a group, they seemed to be coping well with the demands of adult life. A total of 75 per cent had received some college education, nearly all had full-time jobs and were satisfied with their work. According to Werner (1989):

  As long as the balance between stressful life events and protective factors is favourable, successful adaptation is possible. When stressful events outweigh the protective factors, however, even the most resilient child can have problems.

ASK YOURSELF...

- In what ways can culture be thought of as an environmental influence on an individual's behaviour?
- Try to identify examples from different areas of psychology, but Chapter 47 might be a good place to begin.

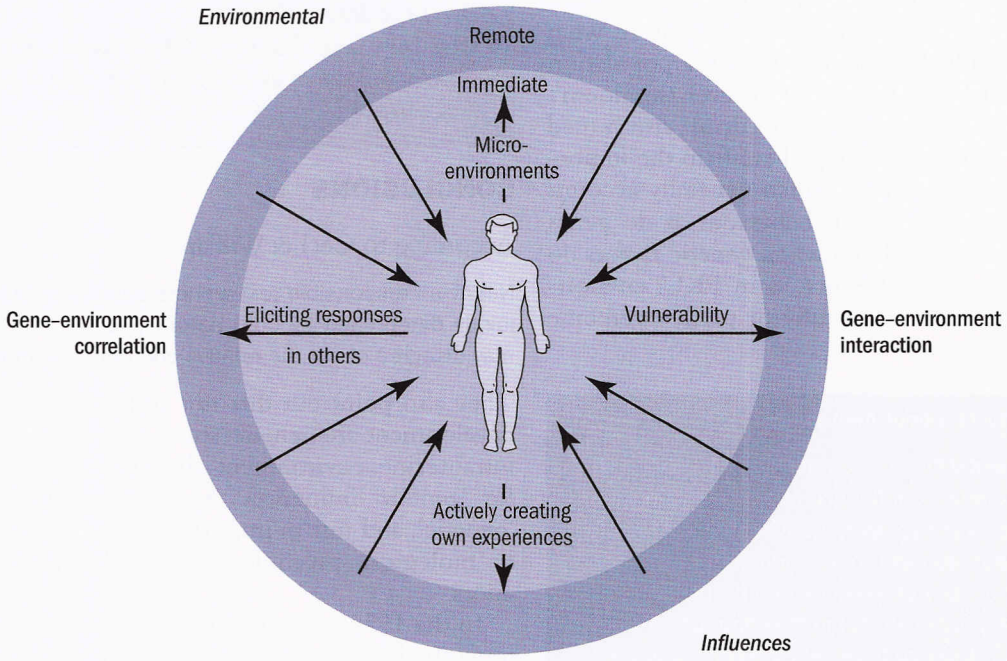


Figure 50.7 The post-natal, sociocultural environment, with the individual portrayed as actively influencing the environment as much as s/he is influenced by it

Behaviour genetics and heritability

Behaviour genetics

According to Pike & Plomin (1999), 'Behaviour geneticists explore the origins of individual differences ... in complex behaviours'. More specifically, they attempt to quantify how much of the variability for any given trait (such as intelligence, aggressiveness, or schizophrenia) can be attributed to (a) genetic differences between people (*heritability*), (b) *shared environments,* and (c) *non-shared environments.* The heritability of intelligence was discussed in Chapter 41, as were the two major methods used by behaviour genetics, namely twin studies and adoption studies (also see Chapter 44).

If genetic factors are important for a trait, identical twins (MZs) will be more similar than non-identical twins (DZs). To the extent that twin similarity cannot be attributed to genetic factors, the *shared environment* is implicated. To the extent that MZs differ within pairs, *non-shared environmental factors* are implicated. Because adopted siblings are genetically unrelated to their adoptive family members, the degree of similarity between them is a direct measure of *shared environmental influence* (Pike & Plomin, 1999).

One interesting finding from behaviour genetic research is that the effects of a shared environment seem to *decrease* over time. In a 10-year longitudinal study of over 200 pairs of adoptive siblings, Loehlin *et al.* (1988) found that at an average age of eight, the correlation for IQ was 0.26. This is similar to other studies of young adoptive siblings, and suggests that shared environment makes an important contribution at this age. However, by age 18 the correlation was close to zero. According to Pike & Plomin (1999):

> These results represent a dramatic example of the importance of genetic research for understanding the environment. Shared environment is important for [general intelligence] during childhood when children are living at home. However, its importance fades in adolescence as influences outside the family become more salient.

This conclusion might at first appear paradoxical, yet behaviour genetics provides the best available evidence for the importance of *nongenetic* factors in behavioural development (Plomin, 1995). For example, the concordance rate of MZs for schizophrenia is 40 per cent, which means that most pairs are discordant for diagnosed schizophrenia (see Chapter 44). While there can be no genetic explanation for this, 20 years ago the message from behaviour genetics research was that genetic factors play the major role. Today, the message is that these same data provide strong evidence for the importance of environmental factors as well as genetic factors (Plomin, 1995). Additionally, the data from twin studies are open to interpretation because not all MZs are equally identical. This is due to certain critical *pre-natal environmental* factors (Ceci & Williams, 1999).

Heritability

According to Ceci & Williams (1999), *heritability* is one of the most controversial concepts in psychology. As noted

earlier, it's a statistical measure of the genetic contribution to differences between individuals, that is, it tells us what proportion of individual differences within a population (*variance*) can be attributed to genes. However, this doesn't mean that 'biology is destiny'. Indeed, as also noted above, behaviour genetics has helped confirm the importance of environmental factors, which generally account for as much variance in human behaviour as do genes (Plomin & DeFries, 1998). Even when genetic factors do have an especially powerful effect, as in PKU, environmental interventions can often fully or partly overcome the genetic 'determinants'.

Box 50.5 Some 'facts' about heritability

- The degree of heritability (or *heritability estimate*/h^2) isn't set in stone: the relative influence of genes and environment can change. For example, if environmental factors were made almost identical for all members of a hypothetical population, any differences in a particular characteristic (say, intelligence) in that population would then have to be attributed to genetics. Heritability would be closer to 100 per cent than 50 per cent.
- At the same time, however, equating the environment would probably reduce the size of differences observed among individuals. If all children enjoyed the best environment possible, they'd probably differ much less than if some had been given the worst possible environment.
- Within the *same* population, h^2 will differ depending on which trait is being measured (for example, it's higher for IQ than for most aspects of personality: see Chapter 42).
- h^2 will also differ for the same trait when assessed in *different* populations.
- h^2 will tend to be higher in a good environment than a poor one; the former provides the necessary resources for the biological potential to be realised.
- h^2 is a way of explaining what makes *people different*, not the relative contribution of genes and environment to any *individual's* make-up.
- The explanation of individual differences *within* groups bears no relation to the explanation of differences *between* groups (see Chapter 41).
- Traits that are *universal* (such as the capacity for language) have *zero heritability*, but are clearly *inherited*. This point is often overlooked even in texts about the nature–nurture debate (Wells, 2000).

(Based on Ceci & Williams, 1999; Plomin & DeFries, 1998)

According to Ceci & Williams (1999):

> Heritability estimates are highly situational: they are descriptions of the relative contributions of genes and environments to the expression of a trait in a specific group, place and time. Such estimates tell us nothing about the relative contributions if the group, place or time is changed.

ASK YOURSELF...

- Based on your reading of this chapter, what conclusions would you draw about the influence of nature and nurture?

CONCLUSIONS

According to Ceci & Williams (1999):

> Nearly all responsible researchers agree that human traits are jointly determined by both nature and nurture, although they may disagree about the relative contributions of each.

They also point out that not all biological influences on development are genetic: some are critical features of the intrauterine environment that are sometimes mistaken for genetic influences. So, 'biological' doesn't mean 'genetic', and just as importantly, 'environment' can refer to biological, psychological, social, and cultural influences.

In the 1950s, the extreme environmentalism of behaviourism dominated thinking about nature–nurture, but the 1960s saw the adoption of a more balanced view. The 1980s and 1990s saw psychology becoming much more accepting of genetic influence (Plomin, 1996). Plomin (1995) maintains that:

> Research and theory in genetics (nature) and in environment (nurture) are beginning to converge ... the common ground is a model of active organism–environment interaction in which nature and nurture play a duet rather than one directing the performance of the other ... It is time to put the nature–nurture controversy behind us and to bring nature and nurture together in the study of development in order to understand the processes by which genotypes become phenotypes.

Similarly, Ceci & Williams (1999) conclude like this:

> The battle today seems more over the specific genetic and environmental mechanisms than over whether genes or environments matter.

CHAPTER SUMMARY

- The **nature–nurture debate** concerns fundamental questions about the causes of human behaviour, sometimes focusing on behaviours and abilities **shared by all human beings**, and sometimes on **individual differences**.
- **Nativists** see knowledge of the world as largely innate, while **empiricists** stress the role of learning and experience. These extreme viewpoints are reflected in early psychological theories, such as Gesell's **maturation** and Watson's **behaviourism**, respectively.
- The concept of maturation continues to be influential in psychology, as in biological processes such as puberty and ageing, and stage theories of development. Watson's

environmentalism was adopted in Skinner's **radical behaviourism**.

- Nativism and empiricism aren't mutually exclusive. Not only must the environment be **benign**, but particular environmental input is often necessary. In both Freud's and Piaget's theories, experience is just as important as the underlying maturation. Both are **interactionists**.
- **Genetics** is the science of heredity. **Genes** are the basic units of hereditary transmission, responsible for **self-duplication** and **protein synthesis**. Self-duplication occurs through **mitosis** (in the case of non-reproductive cells) and **meiosis** (in the case of reproductive cells).
- **Neurogenetic determinism** makes the false assumption that causes can be classified as *either* genetic *or* environmental. Also, the phrase 'genes for' is a convenient but misleading shorthand for complex biochemical processes.
- Cells inherit genes along with an 'epigenetic' instruction manual, without which multicellular organisms would be impossible. Changes in the instruction manual may be passed from parent to offspring. Heredity may thus involve more than DNA.
- The term '**environment**' is commonly used to refer to **postnatal** influences lying **outside** the body of a passive individual who's shaped by them. However, people also make their own environments, and for most characteristics, the **shared environment** seems to have little impact on development compared with the **non-shared environment**.
- The concept of non-shared environments helps explain how the environment influences development. Two ways in which non-shared environments arise are **gene–environment correlations** and **gene–environment interactions**.
- PKU illustrates the lack of a one-to-one relationship between **genotype** and **phenotype**. Other examples include **cumulative deficit** and Horowitz's concept of **facilitativeness**.
- **Behaviour genetics** attempts to quantify how much of the **variability** for any particular trait is due to **heritability**, shared environments, and non-shared environments.
- **Heritability estimates** describe the relative contributions of genes and environment for particular traits, in a specific population, at a particular place and time. They are measures of individual differences **within** groups, and can tell us nothing about **between**-group differences or particular individuals within a group.
- Human traits are determined by **both** nature and nurture. Where researchers may still disagree is over the **relative contributions** of each, and the specific genetic and environmental **mechanisms** involved.

Links with other topics/chapters

- Phenylketonuria (PKU) is a much-cited example of how genetic factors don't inevitably result in particular behaviours/abilities (phenotypes), which is especially relevant to discussion of individual differences in *intelligence* (Chapter 41).
- Neurogenetic determinism is one of four major kinds of *determinism* identified by Rose (Chapter 49, Box 49.6).
- The epigenetic principle is an important feature of Erikson's *psychosocial theory of development* (Chapters 37–39).
- According to Claridge & Davis (2003), the reason for taking an interest in the genetic effects on individual differences (and there's good evidence they exist) *isn't* to *reduce* everything to heredity, but to see where such influences fit into the larger picture about personality (Chapters 42 and 49).
- According to Joseph (2003), in the MGR literature it's striking how little attention is paid to people's social environment as a cause of 'mental illness'. The causes are viewed as residing at the molecular level. This epitomises the *reductionist* view of human problems (Chapter 49) and also illustrates *individualism* (Chapter 47).
- An example of reactive gene–environment correlation is the observation that *aggressive children* tend to experience *aggressive environments* because they tend to evoke *aggressive responses* in others (Chapter 29).

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